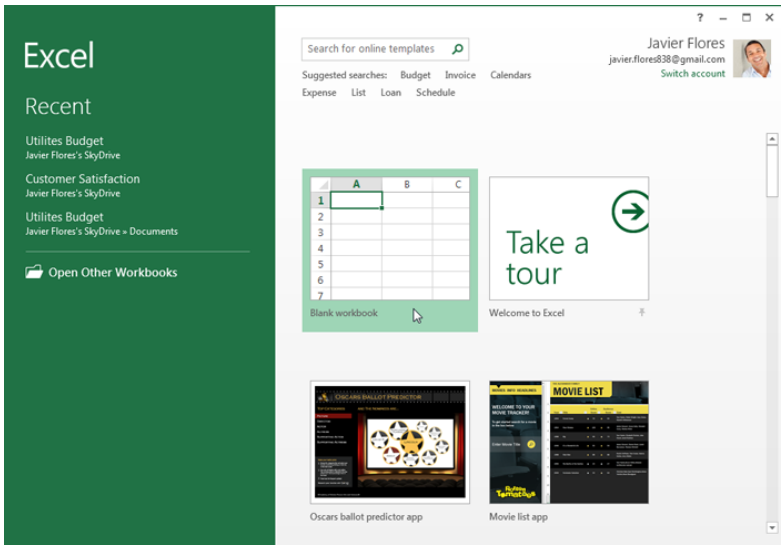
Chapter-1 Getting To Know Excel 2013

Introduction

Excel 2013 is a **spreadsheet program** that allows you to **store**, **organize**, and **analyze information**. While you may believe Excel is only used by certain people to process complicated data, anyone can learn how to take advantage of the program's **powerful features**. Whether you're keeping a budget, organizing a training log, or creating an invoice, Excel makes it easy to work with different types of data.

Getting to know Excel 2013

Excel 2013 is similar to Excel 2010. If you've previously used Excel 2010, Excel 2013 should feel familiar. If you are new to Excel or have more experience with older versions, you should first take some time to become familiar with the **Excel 2013 interface**.



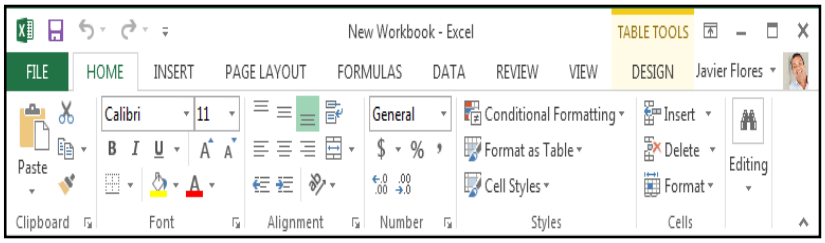
The Excel interface

When you open Excel 2013 for the first time, the **Excel Start Screen** will appear. From here, you'll be able to create a **new workbook**, choose a **template**, and access your **recently edited workbooks**.

- From the **Excel Start Screen**, locate and select **Blank workbook** to access the Excel interface.

The Ribbon

Excel 2013 uses a **tabbed Ribbon system** instead of traditional menus. **The Ribbon** contains **multiple tabs**, each with several **groups of commands**. You will use these tabs to perform the most **common tasks** in Excel.

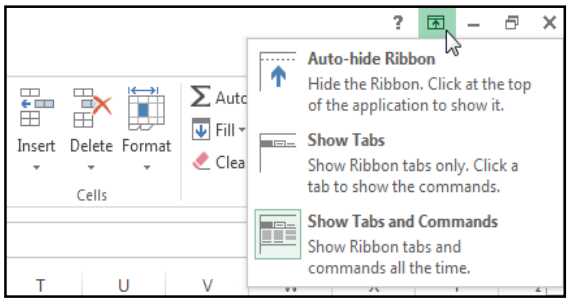


The **Home** tab gives you access to some of the most commonly used commands for working with data in Excel 2013, including **copying and pasting**, **formatting**, and **number styles**. The Home tab is selected by default whenever you open Excel.

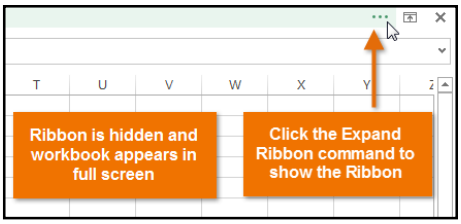
To minimize and maximize the Ribbon:

The Ribbon is designed to respond to your current task, but you can choose to **minimize** it if you find that it takes up too much screen space.

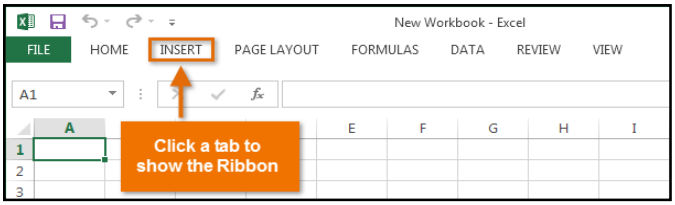
1. Click the **Ribbon Display Options** arrow in the upper-right corner of the Ribbon.



2. Select the desired **minimizing option** from the drop-down menu:



- **Auto-hide Ribbon:** Auto-hide displays your workbook in full-screen mode and completely hides the Ribbon. To **show the Ribbon**, click the **Expand Ribbon** command at the top of screen.
- **Show Tabs:** This option hides all command groups when they're not in use, but **tabs** will remain visible. To **show the Ribbon**, simply click a tab.



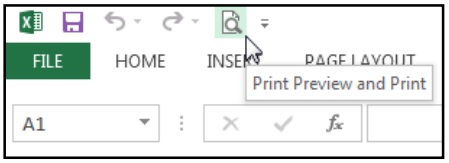
- **Show Tabs and Commands:** This option maximizes the Ribbon. All of the tabs and commands will be visible. This option is selected by default when you open Excel for the first time.

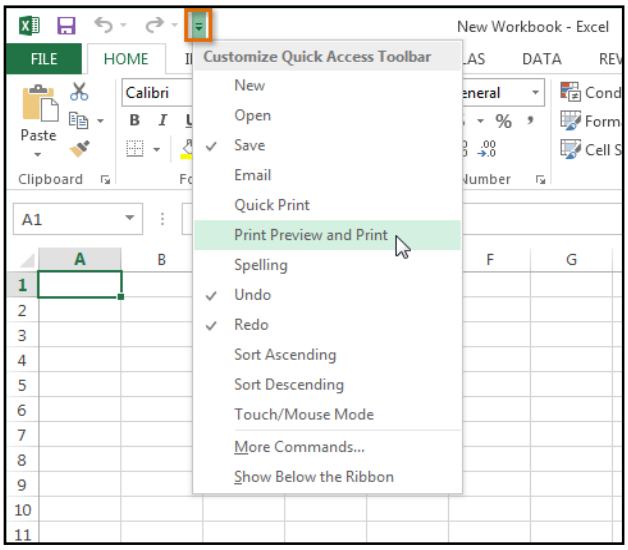
The Quick Access toolbar

Located just above the Ribbon, the **Quick Access toolbar** lets you access common commands no matter which tab is selected. By default, it includes the **Save**, **Undo**, and **Repeat** commands. You can add other commands depending on your preference.

To add commands to the Quick Access toolbar:

1. Click the **drop-down arrow** to the right of the **Quick Access toolbar**.
2. Select the **command** you want to add from the drop-down menu. To choose from more commands, select **More Commands**.
3. The command will be **added** to the Quick Access toolbar.



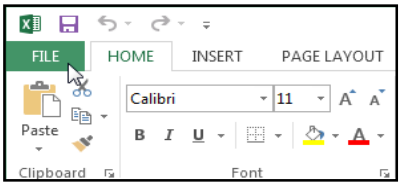


Backstage view

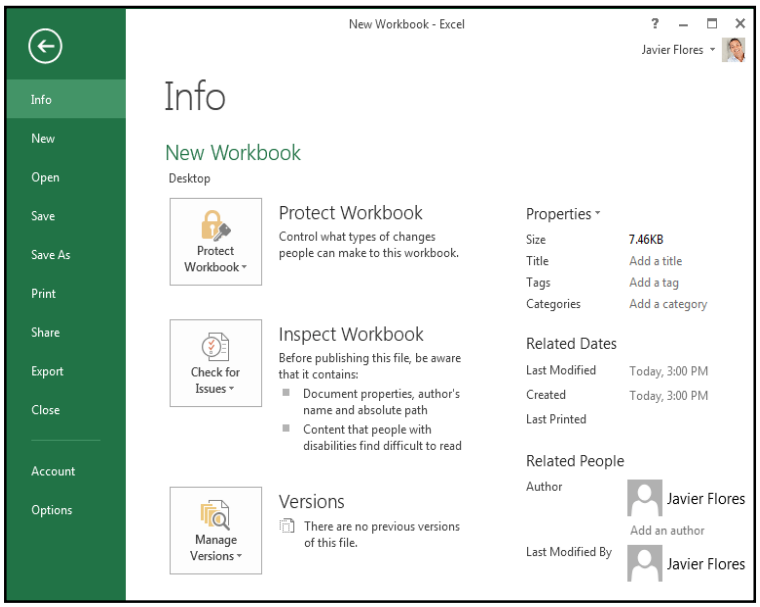
Backstage view gives you various options for saving, opening a file, printing, and sharing your workbooks.

To access Backstage view:

1. Click the **File** tab on the **Ribbon**. **Backstage view** will appear.

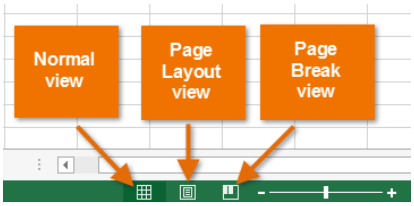


Click the buttons in the interactive below to learn more about using Backstage view.



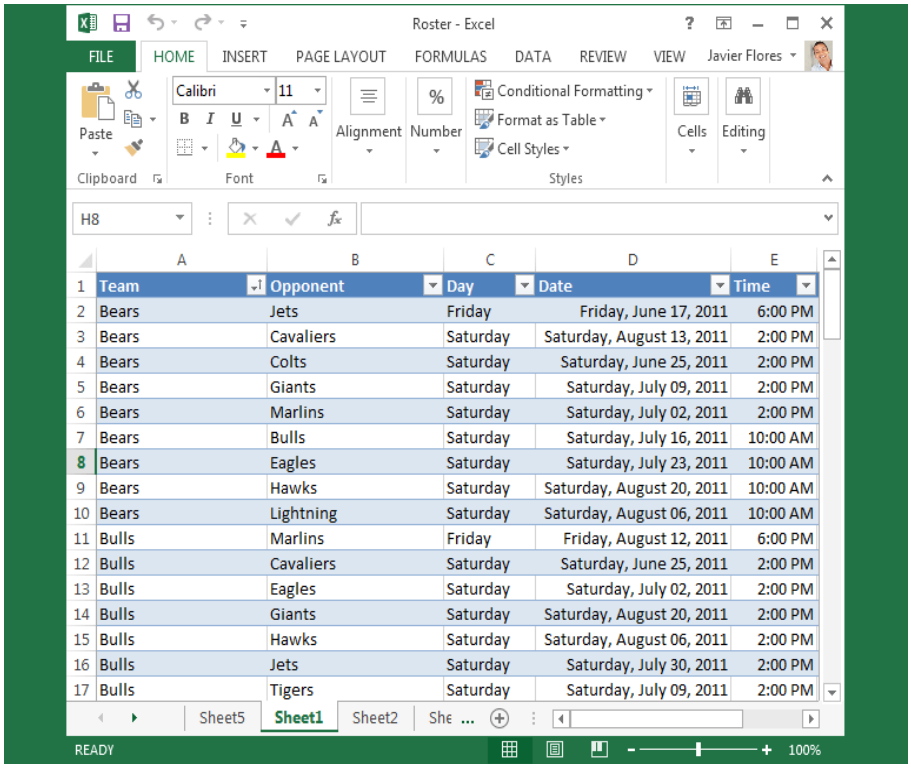
Worksheet views

Excel 2013 has a variety of viewing options that change how your workbook is displayed. You can choose to view any workbook in **Normal view**, **Page Layout view**, or **Page Break view**. These views can be useful for various tasks, especially if you're planning to **print** the spreadsheet.

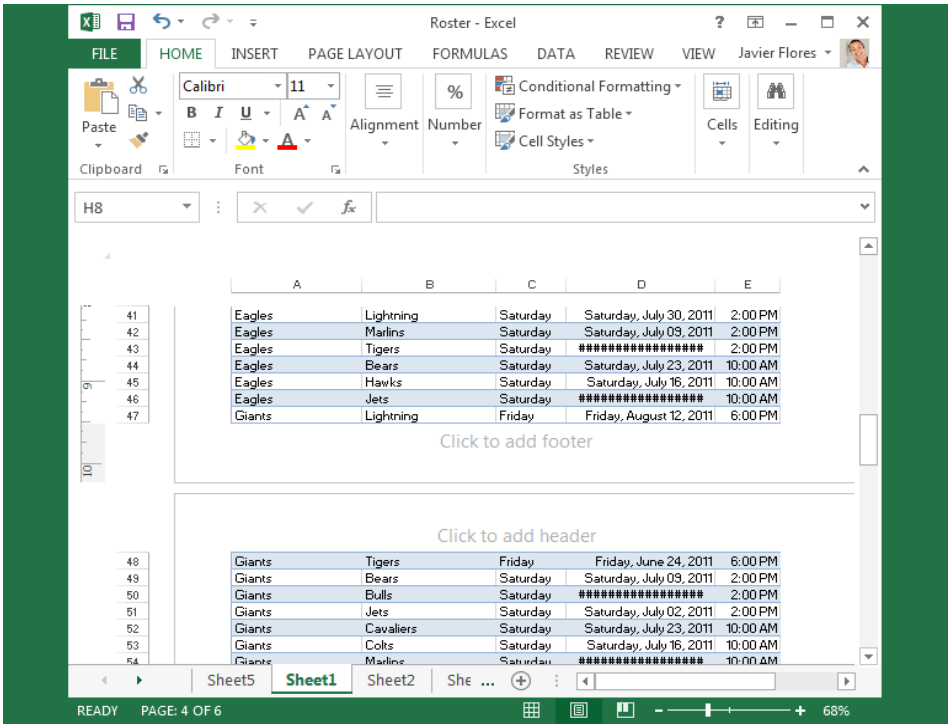


- To **change worksheet views**, locate and select the desired **worksheet view command** in the bottom-right corner of the Excel window.

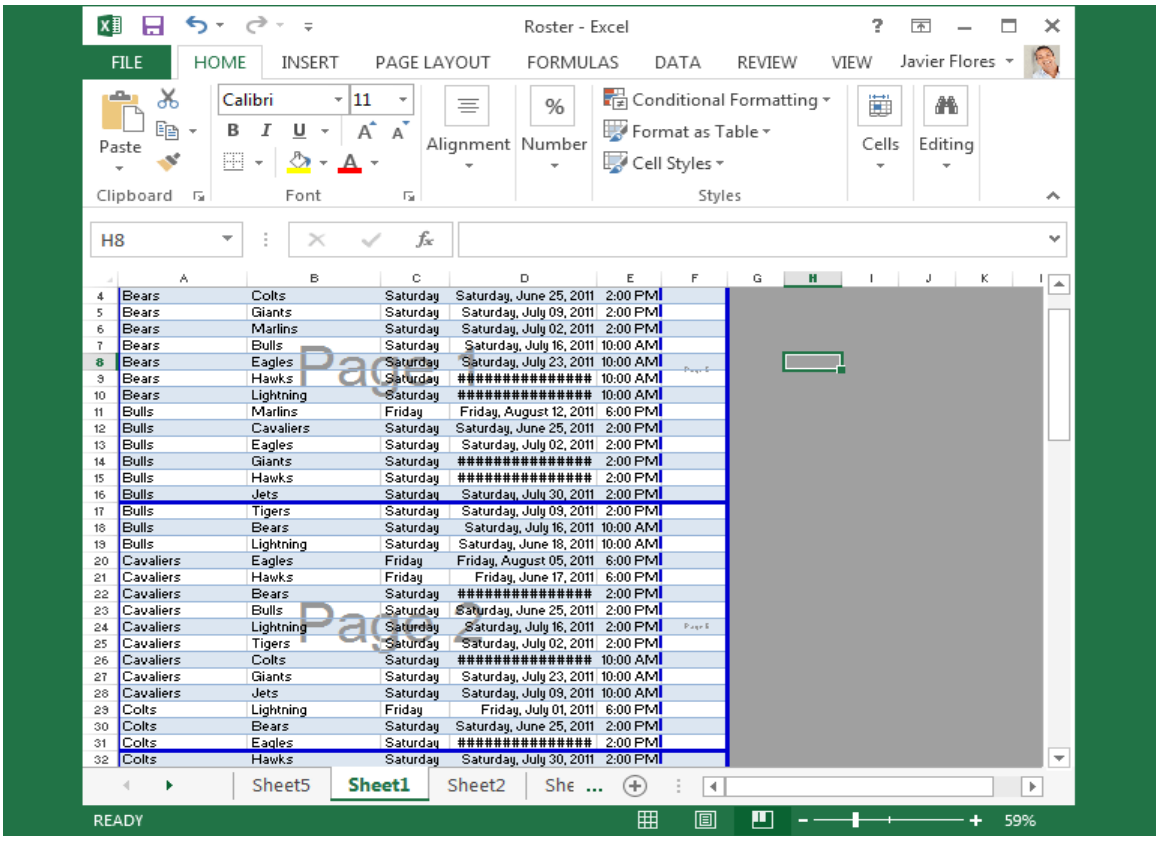
Click the arrows in the slideshow below to review the different worksheet view options.



Normal view: This is the default view for all worksheets in Excel.



Page Layout view: This view can help you visualize how your worksheet will appear when printed. You can also add headers and footers from this view.



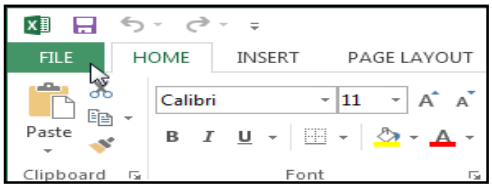
Page Break view: This view makes it easy to change the location of page breaks in your workbook, which is especially helpful when printing a lot of data from Excel.

Chapter-2 Creating and Opening Workbooks

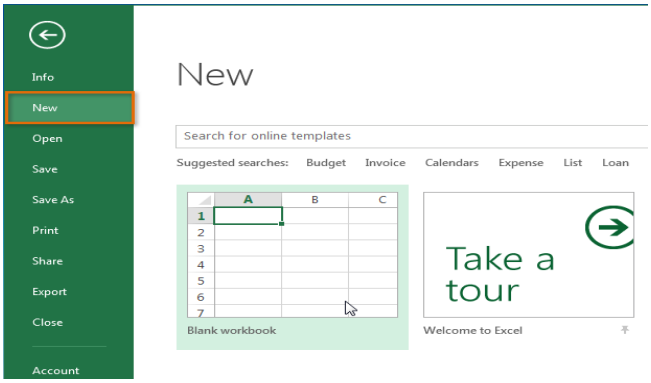
Introduction

Excel files are called **workbooks**. Whenever you start a new project in Excel, you'll need to **create a new workbook**. There are several ways to start working with a workbook in Excel 2013. You can choose to **create a new workbook**—either with a **blank workbook** or a predesigned **template**—or **open an existing** workbook.

To create a new blank workbook:



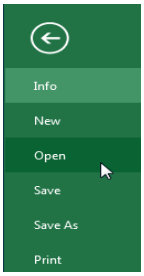
1. Select the **File** tab. **Backstage view** will appear.
2. Select **New**, then click **Blank workbook**.



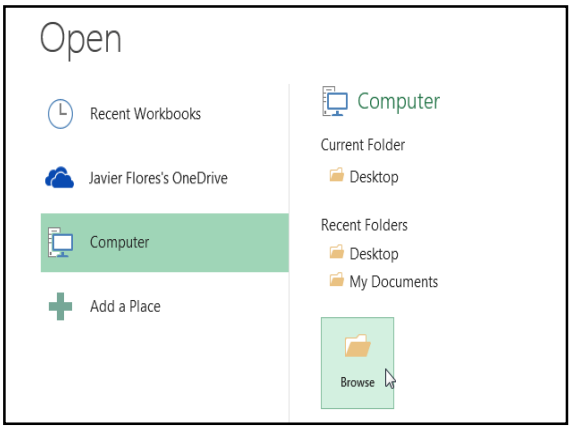
3. A new blank workbook will appear.

To open an existing workbook:

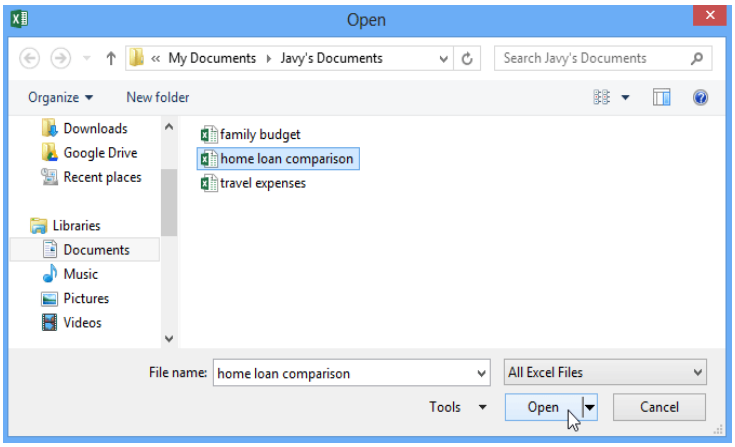
In addition to creating new workbooks, you'll often need to open a workbook that was previously saved. To learn more about saving workbooks, visit our lesson on **Saving and Sharing Workbooks**.



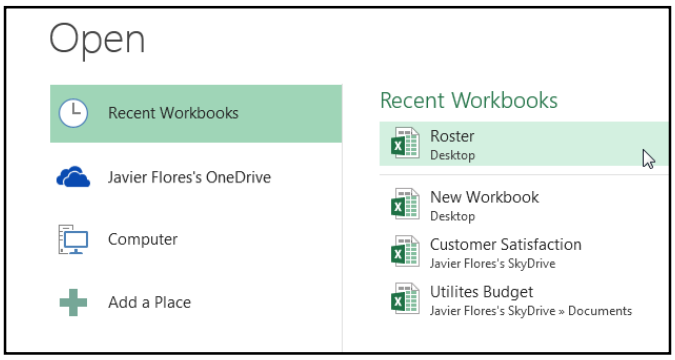
1. Navigate to **Backstage view**, then click **Open**.
2. Select **Computer**, then click **Browse**. Alternatively, you can choose **OneDrive (previously known as SkyDrive)** to open files stored on your **OneDrive**.



3. The **Open** dialog box will appear. Locate and select your **workbook,** then click **Open**.



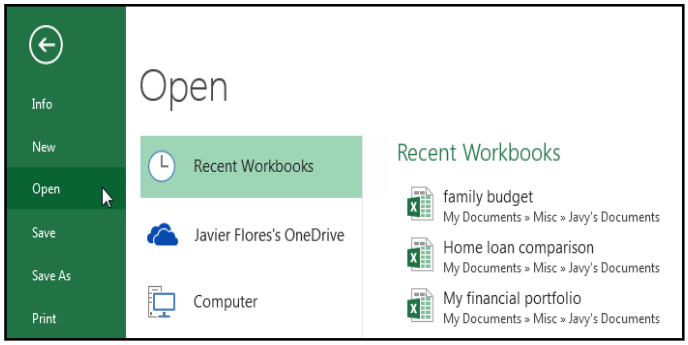
If you've opened the desired workbook recently, you can browse your **Recent Workbooks** rather than search for the file.



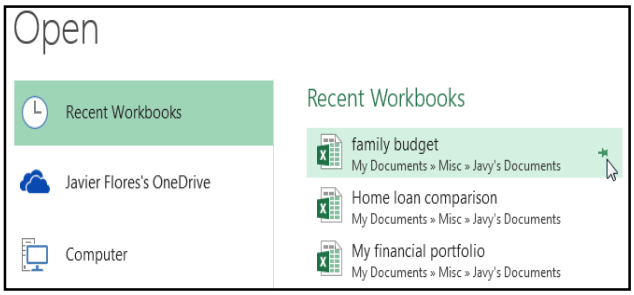
To pin a workbook:

If you frequently work with the **same workbook**, you can **pin it** to Backstage view for faster access.

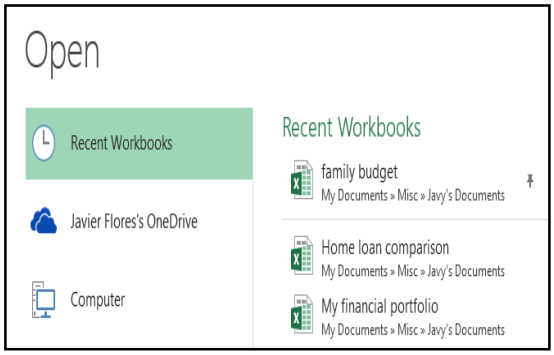
1. Navigate to **Backstage view**, then click **Open**. Your **recently edited workbooks** will appear.



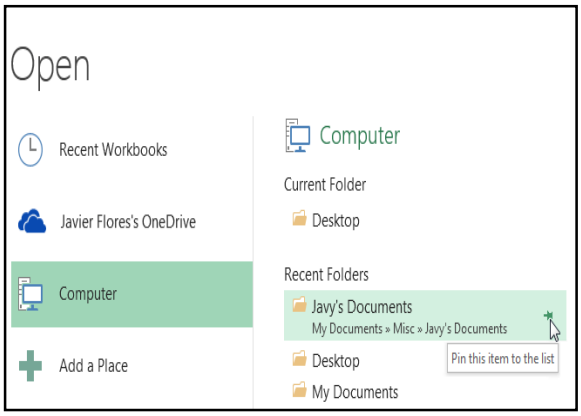
2. Hover the mouse over the **workbook** you want to pin. A **pushpin icon** will appear next to the workbook. Click the **pushpin icon**.



3. The workbook will stay in Recent Workbooks. To **unpin** a workbook, simply click the pushpin icon again.



You can also **pin folders** to Backstage view for faster access. From Backstage view, click **Open**, then locate the **folder** you want to pin and click the **pushpin icon**.

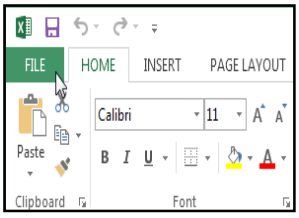


Using templates

A **template** is a **predesigned spreadsheet** you can use to create a new workbook quickly. Templates often include **custom formatting** and **predefined formulas**, so they can save you a lot of time and effort when starting a new project.

To create a new workbook from a template:

1. Click the **File** tab to access **Backstage view**.

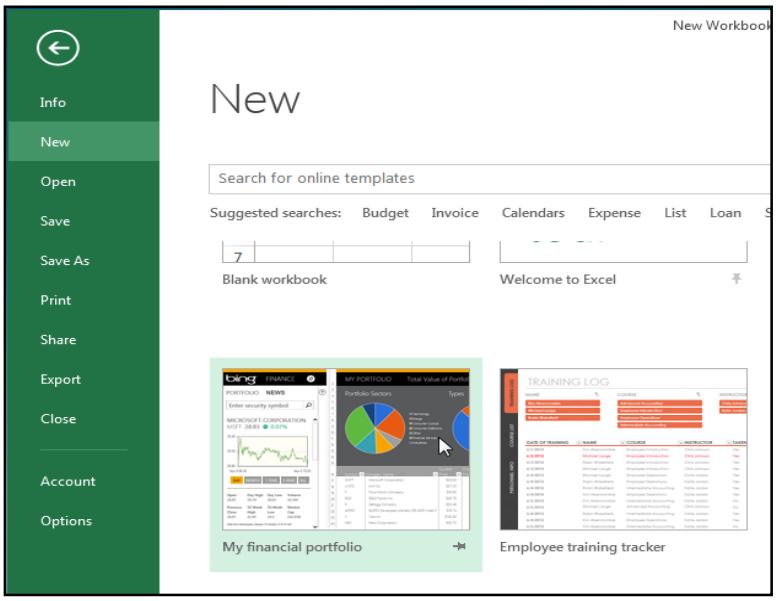


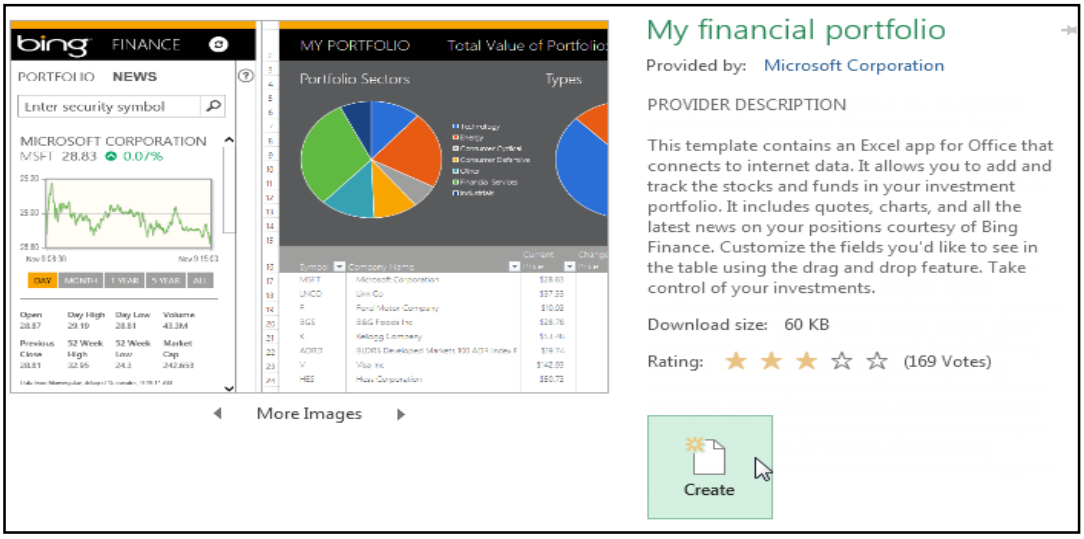
2. Select **New**. Several templates will appear below the **Blank workbook** option.

3. Select a **template** to review it.

4. A **preview** of the template will appear, along with **additional information** on how the template can be used.

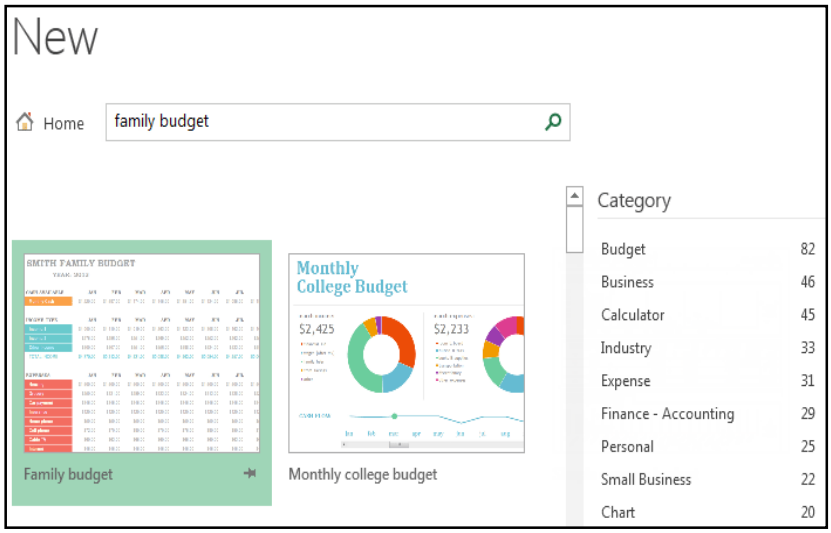
5. Click **Create** to use the selected template.





6. A new workbook will appear with the **selected template**.

You can also browse templates by **category** or use the **search bar** to find something more specific.



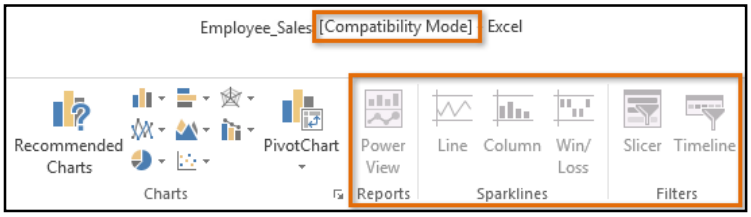
It's important to note that not all templates are created by Microsoft. Many are created by third-party providers and even individual users, so some templates may work better than others.

Compatibility mode

Sometimes you may need to work with workbooks that were created in earlier versions of Microsoft Excel, such as Excel 2003 or Excel 2000. When you open these types of workbooks, they will appear in **Compatibility mode**.

Compatibility mode **disables** certain features, so you'll only be able to access commands found in the program that was used to create the workbook. For example, if you open a workbook created in Excel 2003, you can only use tabs and commands found in Excel 2003.

In the image below, you can see that the workbook is in Compatibility mode. This will disable some Excel 2013 features, such as spark lines and slicers.

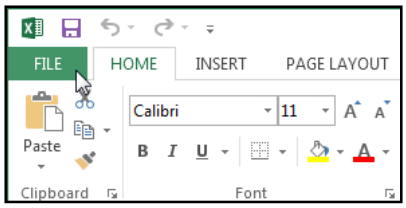


In order to exit Compatibility mode, you'll need to **convert** the workbook to the current version type. However, if you're collaborating with others who only have access to an earlier version of Excel, it's best to leave the workbook in Compatibility mode so the format will not change.

To convert a workbook:

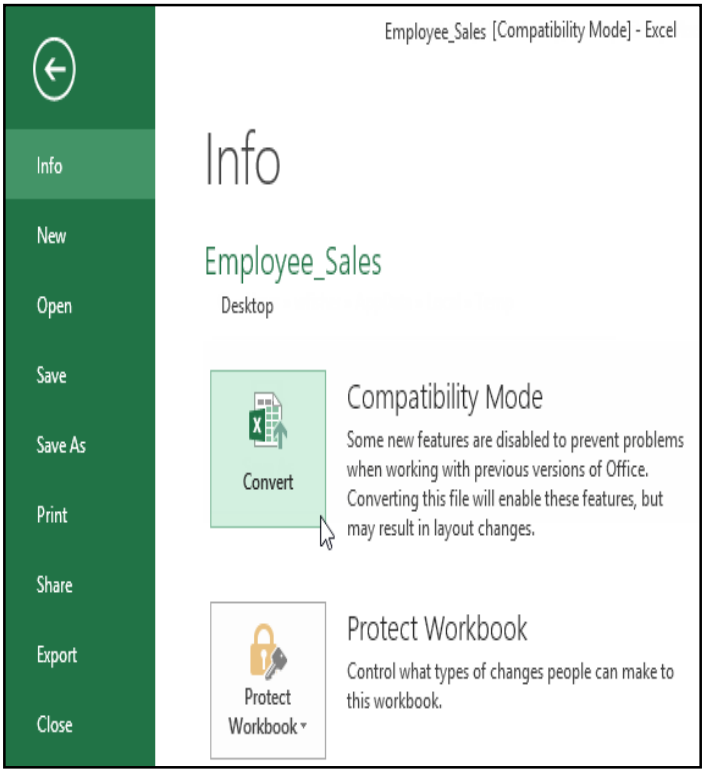
If you want access to all of the Excel 2013 features, you can **convert** the workbook to the 2013 file format.

Note that converting a file may cause some changes to the **original layout** of the workbook.

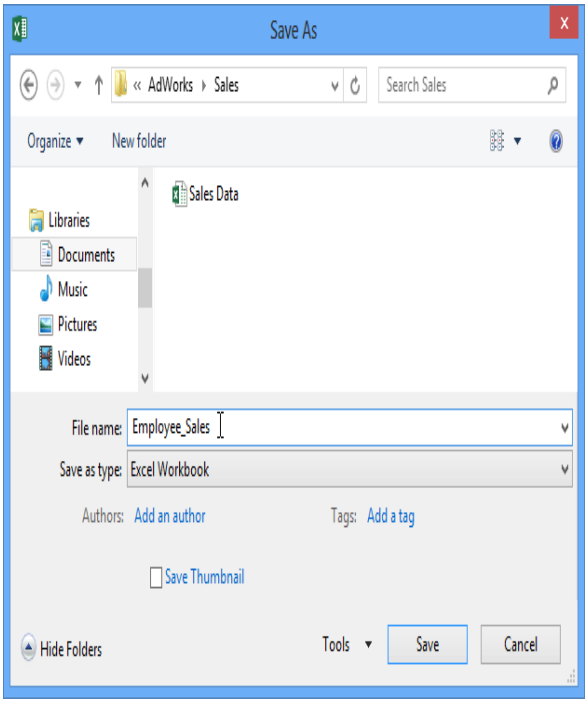


1. Click the **File** tab to access Backstage view.

2. Locate and select **Convert** command.



3. The **Save As** dialog box will appear. Select the **location** where you want to save the workbook, enter a **file name** for the presentation, and click **Save**.



4. The workbook will be converted to the newest file type.

Chapter-3 Saving and Sharing Workbooks

Introduction

Whenever you create a new workbook in Excel, you'll need to know how to **save** it in order to access and edit it later. As with previous versions of Excel, you can save files **locally** to your computer. But unlike older versions, Excel 2013 also lets you save a workbook to **the cloud** using **OneDrive**. You can also **export** and **share** workbooks with others directly from Excel.

OneDrive was previously called SkyDrive. There's nothing fundamentally different about the way OneDrive works—it's just a new name for an existing service. Over the next few months, you may still see SkyDrive in some Microsoft products.

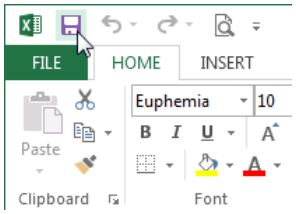
Save and Save As

Excel offers two ways to save a file: **Save** and **Save As**. These options work in similar ways, with a few important differences:

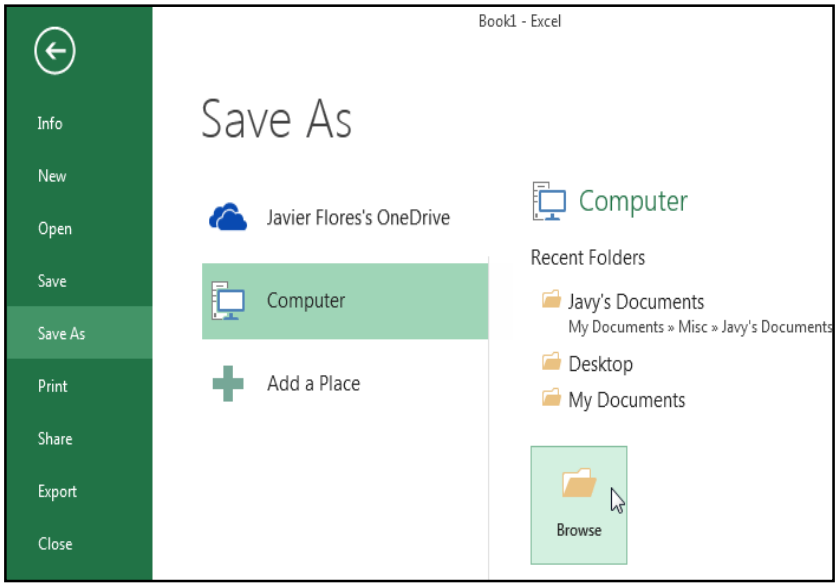
- **Save**: When you create or edit a workbook, you'll use the **Save** command to save your changes. You'll use this command most of the time. When you save a file, you'll only need to choose a file name and location the first time. After that, you can just click the Save command to save it with the same name and location.
- **Save As**: You'll use this command to create a **copy** of a workbook while keeping the original. When you use Save As, you'll need to choose a different name and/or location for the copied version.

To save a workbook:

It's important to **save your workbook** whenever you start a new project or make changes to an existing one. Saving early and often can prevent your work from being lost. You'll also need to pay close attention to **where you save** the workbook so it will be easy to find later.

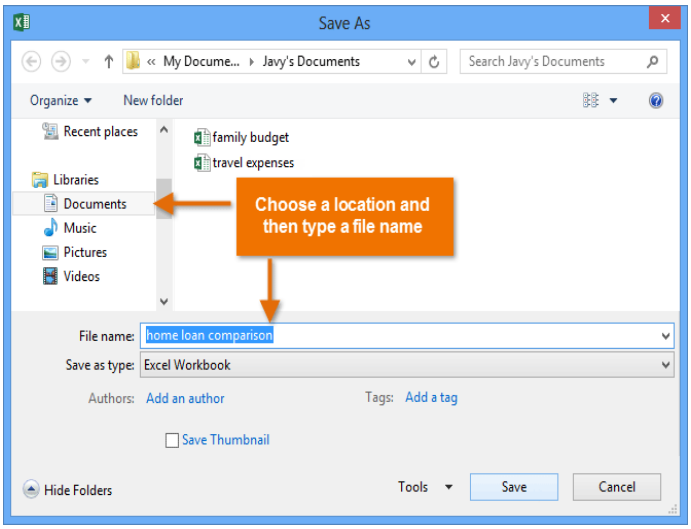


1. Locate and select the **Save** command on the **Quick Access toolbar**.
2. If you're saving the file for the first time, the **Save As** pane will appear in **Backstage view**.
3. You'll then need to choose **where to save** the file and give it a **file name**. To save the workbook to your computer, select **Computer**, then click **Browse**. Alternatively, you can click **OneDrive** to save the file to your OneDrive.

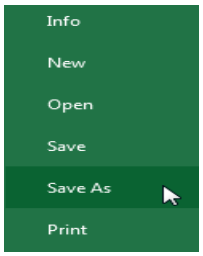


4. The **Save As** dialog box will appear. Select the **location** where you want to save the workbook.
5. Enter a **file name** for the workbook, then click **Save**.
6. The workbook will be **saved**. You can click the **Save** command again to save your changes as you modify the workbook.

You can also access the **Save** command by pressing **Ctrl+S** on your keyboard.



Using Save As to make a copy



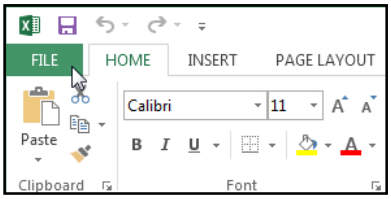
If you want to save a **different version** of a workbook while keeping the original, you can create a **copy**. For example, if you have a file named **Sales Data**, you could save it as **Sales Data 2** so you'll be able to edit the new file and still refer back to the original version.

To do this, you'll click the **Save As** command in Backstage view. Just like when saving a file for the first time, you'll need to choose **where to save** the file and give it a new **file name**.

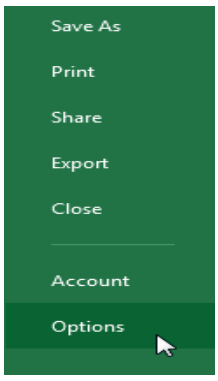
To change the default save location:

If you don't want to use **OneDrive**, you may be frustrated that OneDrive is selected as the default location when saving. If you find it inconvenient to select **Computer** each time, you can change the **default save location** so **Computer** is selected by default.

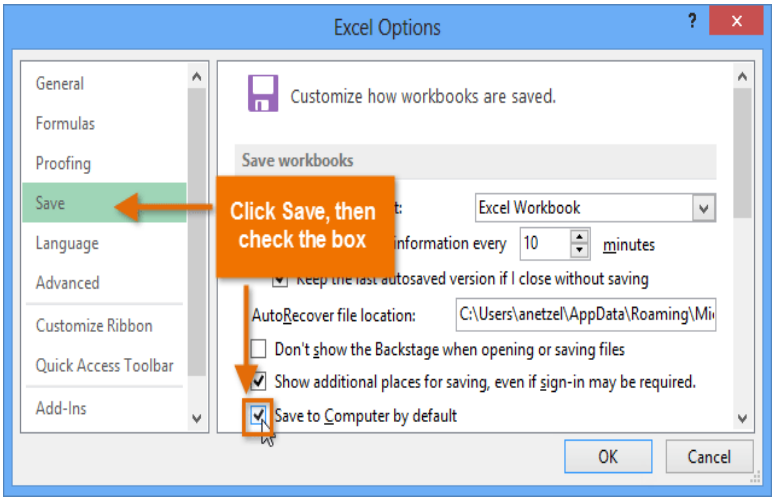
1. Click the **File** tab to access **Backstage view**.



2. Click **Options**.



3. The **Excel Options** dialog box will appear. Select **Save**, **check the box** next to **Save to Computer by default**, then click **OK**. The default save location will be changed.

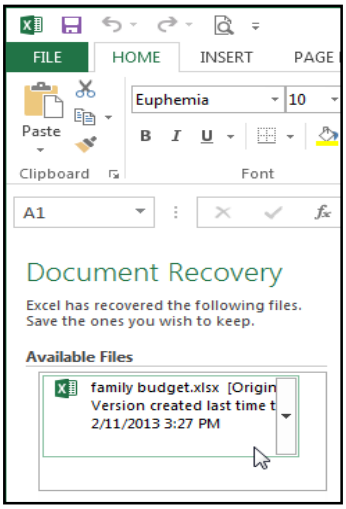


AutoRecover

Excel automatically saves your workbooks to a temporary folder while you are working on them. If you forget to save your changes or if Excel crashes you can restore the file using **AutoRecover**.

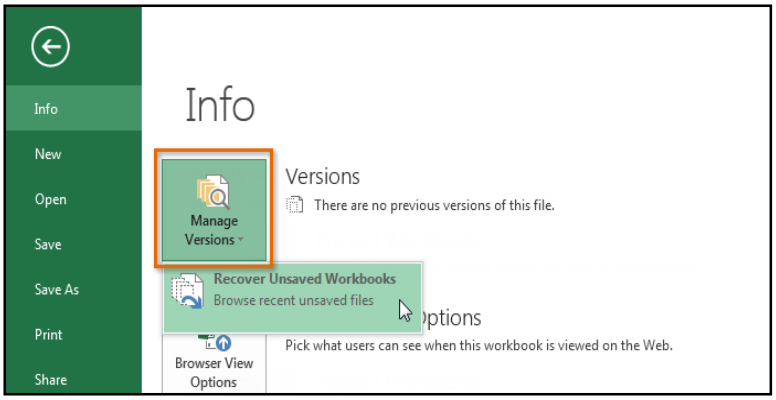
To use AutoRecover:

1. Open Excel 2013. If **autosaved versions** of a file are found, the **Document Recovery** pane will appear.
2. Click to **open** an available file. The workbook will be **recovered**.



By default, Excel autosaves every 10 minutes. If you are editing a workbook for less than 10 minutes, Excel may not create an autosaved version.

If you don't see the file you need, you can browse all autosaved files from **Backstage view**. Just select the **File** tab, click **Manage Versions,** then choose **Recover Unsaved Workbooks**.



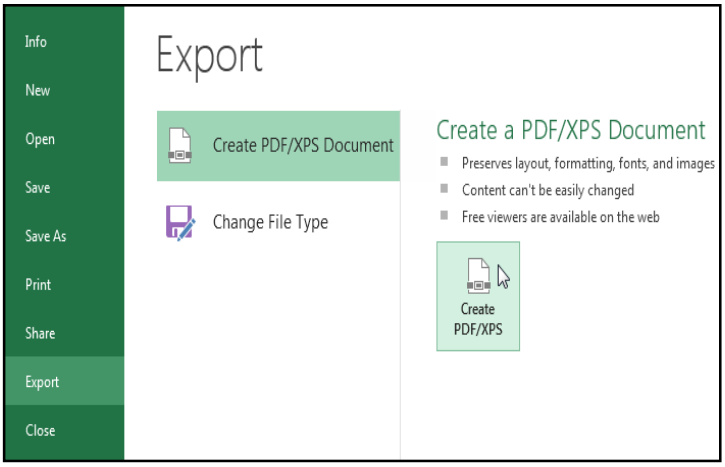
Exporting workbooks

By default, Excel workbooks are saved in the **.xlsx** file type. However, there may be times when you need to use **another file type,** such as a **PDF** or **Excel 97-2003 workbook**. It's easy to **export** your workbook from Excel in a variety of file types.

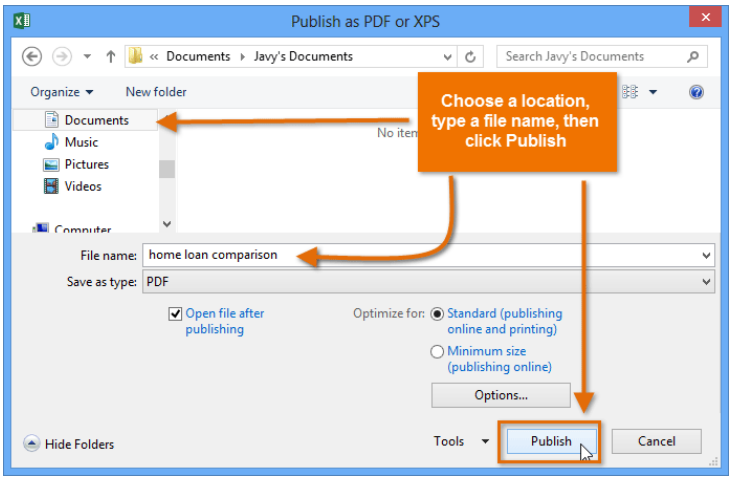
To export a workbook as a PDF file:

Exporting your workbook as an **Adobe Acrobat document**, commonly known as a **PDF file**, can be especially useful if you're sharing a workbook with someone who does not have Excel. A PDF will make it possible for recipients to view but not edit the content of your workbook.

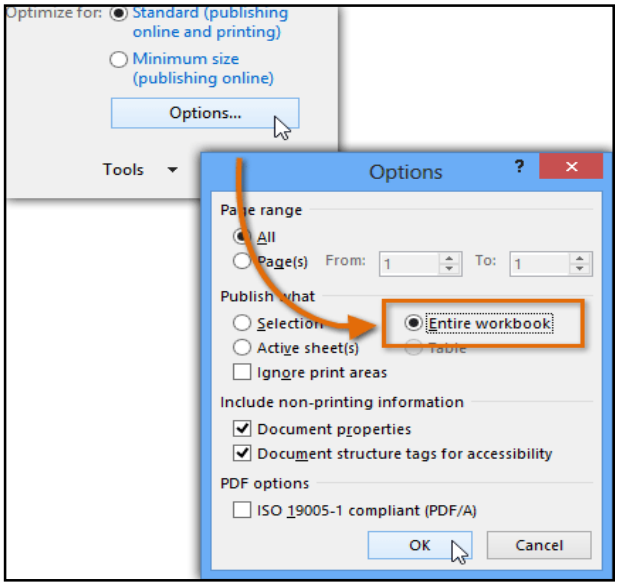
1. Click the **File** tab to access **Backstage view**.
2. Click **Export**, then select **Create PDF/XPS**.



3. The **Save As** dialog box will appear. Select the **location** where you want to export the workbook, enter a **file name**, then click **Publish.**



By default, Excel will only export the **active worksheet**. If you have multiple worksheets and want to save all of them in the same PDF file, click **Options** in the **Save as** dialog box. The **Options** dialog box will appear. Select **Entire workbook**, then click **OK**.

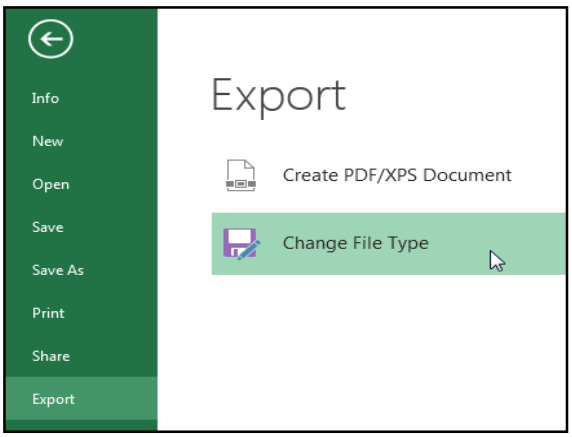


Whenever you export a workbook as a PDF, you'll also need to consider how your workbook data will appear on each **page** of the PDF, just like **printing** a workbook. Visit our **Page Layout** lesson to learn more about what to consider before exporting a workbook as a PDF.

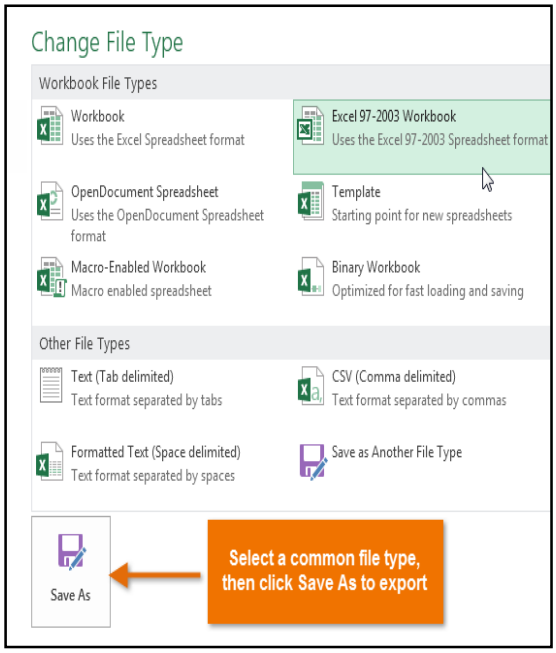
To export a workbook in other file types:

You may also find it helpful to export your workbook in other file types, such as an **Excel 97-2003 workbook** if you need to share with people using an older version of Excel, or a **.CSV file** if you need a **plain-text version** of your workbook.

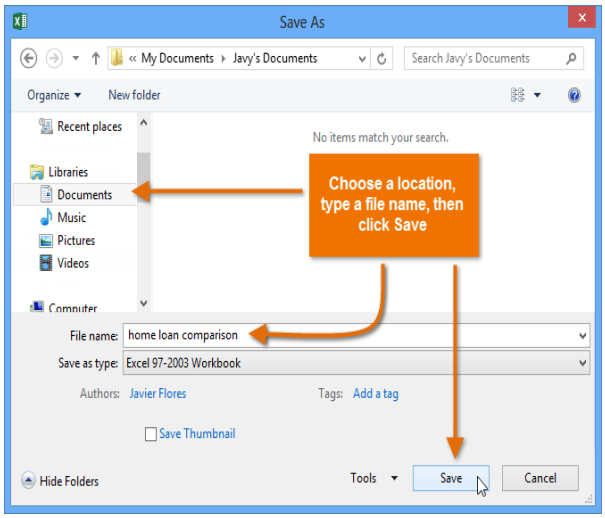
1. Click the **File** tab to access **Backstage view**.
2. Click **Export**, then select **Change File Type**.



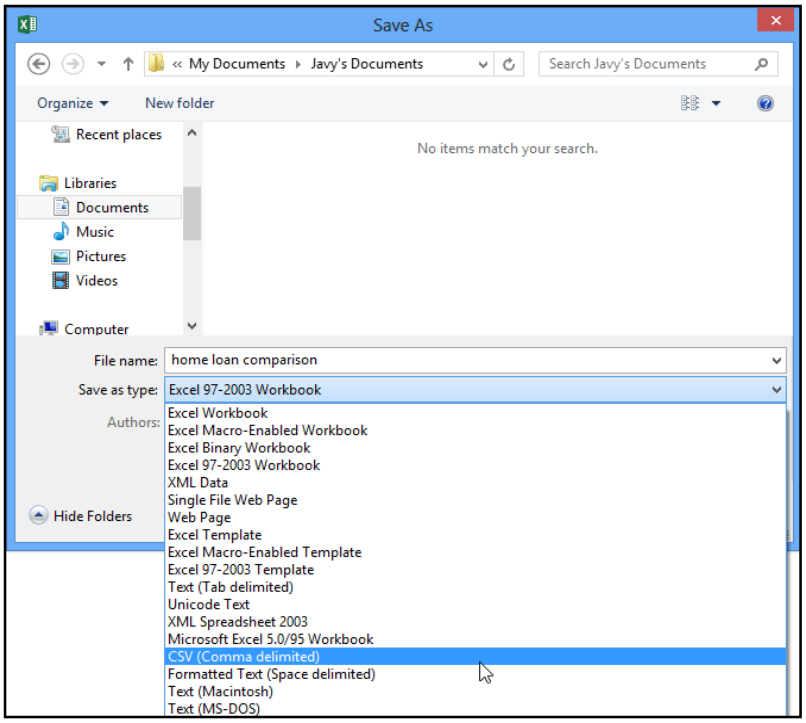
3. Select a common **file type**, then click **Save As**.



4. The **Save As** dialog box will appear. Select the **location** where you want to export the workbook, enter a **file name**, then click **Save**.



You can also use the **Save as type:** drop-down menu in the **Save As** dialog box to save workbooks in a variety of file types.



Sharing workbooks

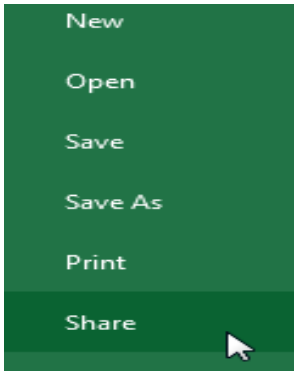
Excel 2013 makes it easy to **share and collaborate** on workbooks using **OneDrive**. In the past, if you wanted to share a file with someone you could send it as an email attachment. While convenient, this system also creates **multiple versions** of the same file, which can be difficult to organize.

When you share a workbook from Excel 2013, you're actually giving others access to the **exact same file**. This lets you and the people you share with **edit the same workbook** without having to keep track of multiple versions.

In order to share a workbook, it must first be **saved to your OneDrive**.

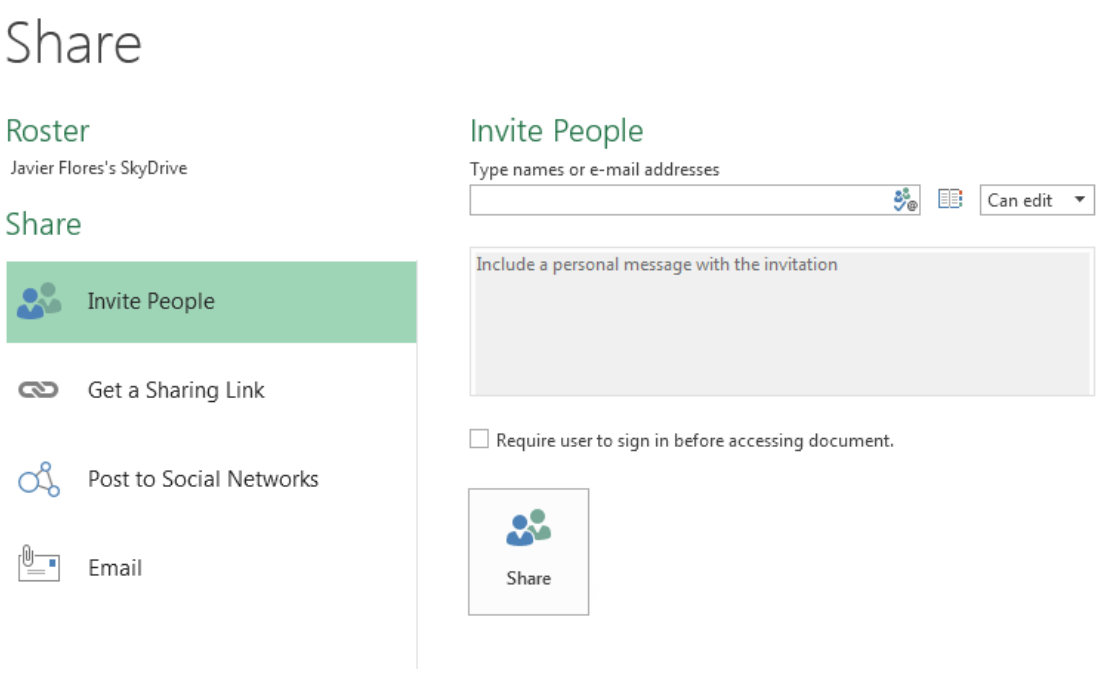
To share a workbook:

1. Click the **File** tab to access **Backstage view**, then click **Share**.



2. The **Share** pane will appear.

Click the buttons in the interactive below to learn more about different ways to share a workbook.



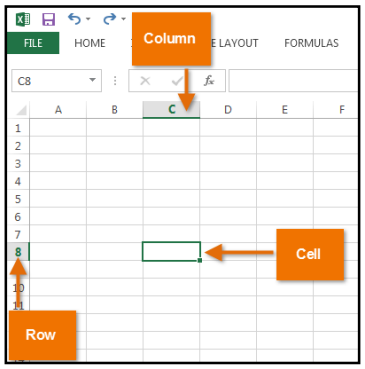
Chapter-4 Cell Basics

Introduction

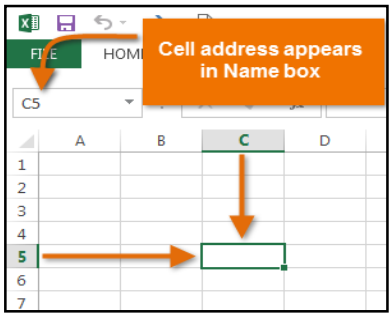
Whenever you work with Excel, you'll enter information—or **content**—into **cells**. Cells are the basic building blocks of a worksheet. You'll need to learn the basics of **cells** and **cell content** to calculate, analyze, and organize data in Excel.

Understanding cells

Every worksheet is made up of thousands of rectangles, which are called **cells**. A cell is the **intersection** of a **row** and a **column**. Columns are identified by **letters (A, B, C)**, while rows are identified by **numbers (1, 2, 3)**.



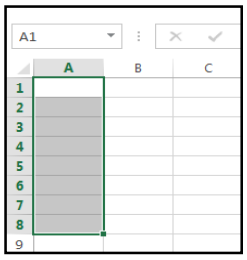
Each cell has its own **name**—or **cell address**—based on its column and row. In this example, the selected cell intersects **column C** and **row 5**, so the cell address is **C5**. The cell address will also appear in the **Name box**. Note that a cell's **column** and **row headings** are **highlighted** when the cell is selected.



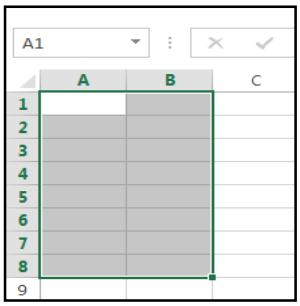
You can also select **multiple cells** at the same time. A group of cells is known as a **cell range**. Rather than a single cell address, you will refer to a cell range using the cell addresses of the **first** and **last** cells in the cell range, separated by a **colon**. For example, a cell range that included cells A1, A2, A3, A4, and A5 would be written as **A1:A5**.

In the images below, two different cell ranges are selected:

- Cell range **A1:A8**



- Cell range **A1:B8**

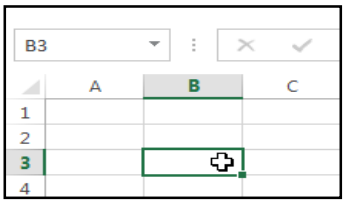


If the columns in your spreadsheet are labeled with numbers instead of letters, you'll need to change the default reference style for Excel

To select a cell:

To input or edit cell content, you'll first need to **select** the cell.

1. Click a **cell** to select it.
2. A **border** will appear around the selected cell, and the **column heading** and **row heading** will be highlighted. The cell will remain **selected** until you click another cell in the worksheet.

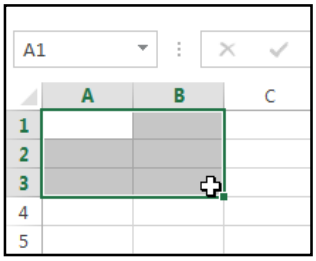


You can also select cells using the **arrow keys** on your keyboard.

To select a cell range:

Sometimes you may want to select a larger group of cells, or a **cell range**.

1. Click, hold, and drag the mouse until all of the **adjoining cells** you want to select are **highlighted**.
2. Release the mouse to **select** the desired cell range. The cells will remain **selected** until you click another cell in the worksheet.



Cell content

Any information you enter into a spreadsheet will be stored in a cell. Each cell can contain different types of **content**, including **text**, **formatting**, **formulas**, and **functions**.

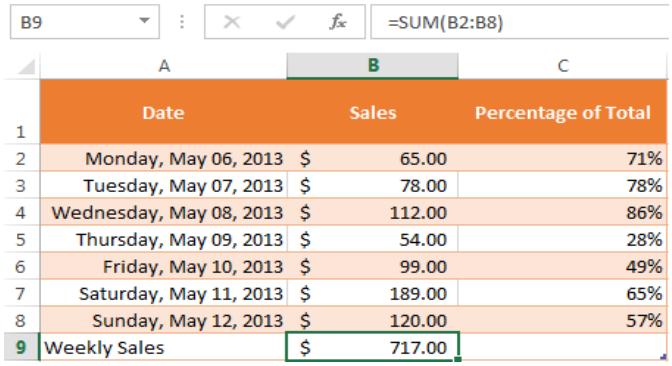
- **Text**
  Cells can contain **text**, such as letters, numbers, and dates.

	A	B	C
1	Date	Sales	Percentage of Total
2	5/6/2013	65	0.71
3	5/7/2013	78	0.78
4	5/8/2013	112	0.86
5	5/9/2013	54	0.28
6	5/10/2013	99	0.49
7	5/11/2013	189	0.65
8	5/12/2013	120	0.57
9			

- **Formatting attributes**
  Cells can contain **formatting attributes** that change the way letters, numbers, and dates are **displayed**. For example, percentages can appear as 0.15 or 15%. You can even change a cell's **background color**.

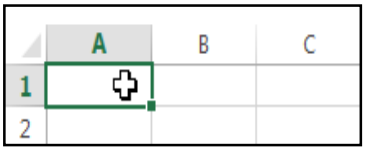
	A	B	C
1	Date	Sales	Percentage of Total
2	Monday, May 06, 2013	$ 65.00	71%
3	Tuesday, May 07, 2013	$ 78.00	78%
4	Wednesday, May 08, 2013	$ 112.00	86%
5	Thursday, May 09, 2013	$ 54.00	28%
6	Friday, May 10, 2013	$ 99.00	49%
7	Saturday, May 11, 2013	$ 189.00	65%
8	Sunday, May 12, 2013	$ 120.00	57%
9			

- **Formulas and functions**
  Cells can contain **formulas** and **functions** that calculate cell values. In our example, SUM(B2:B8) adds the value of each cell in cell range B2:B8 and displays the total in cell B9.

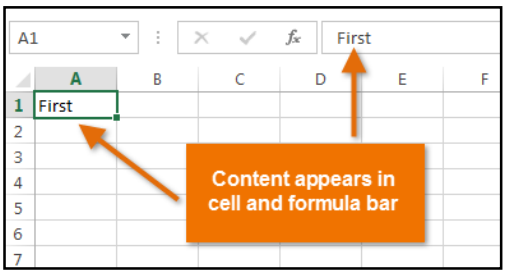


To insert content:

1. Click a **cell** to select it.

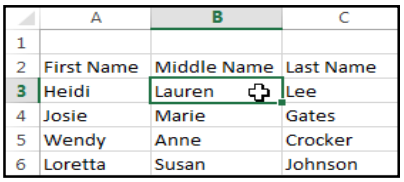


2. Type **content** into the selected cell, then press **Enter** on your keyboard. The content will appear in the **cell** and the **formula bar**. You can also input and edit cell content in the formula bar.



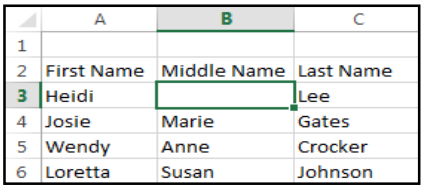
To delete cell content:

1. Select the **cell** with content you want to delete.



	A	B	C
1			
2	First Name	Middle Name	Last Name
3	Heidi	Lauren	Lee
4	Josie	Marie	Gates
5	Wendy	Anne	Crocker
6	Loretta	Susan	Johnson

2. Press the **Delete** or **Backspace** key on your keyboard. The cell's contents will be deleted.



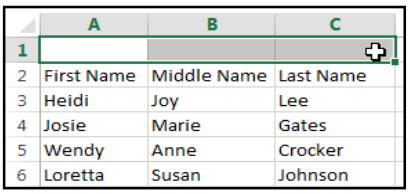
	A	B	C
1			
2	First Name	Middle Name	Last Name
3	Heidi		Lee
4	Josie	Marie	Gates
5	Wendy	Anne	Crocker
6	Loretta	Susan	Johnson

You can use the **Delete** key on your keyboard to delete content from **multiple cells** at once. The Backspace key will only delete one cell at a time.

To delete cells:

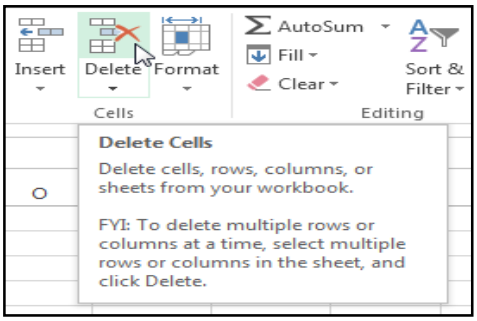
There is an important difference between **deleting the content of a cell** and **deleting the cell itself**. If you delete the entire cell, the cells below it will **shift up** and replace the deleted cells.

1. Select the **cell(s)** you want to delete.

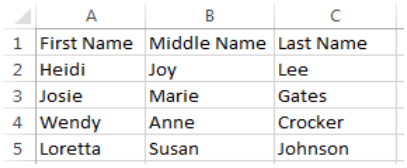


	A	B	C
1			
2	First Name	Middle Name	Last Name
3	Heidi	Joy	Lee
4	Josie	Marie	Gates
5	Wendy	Anne	Crocker
6	Loretta	Susan	Johnson

2. Select the **Delete** command from the **Home** tab on the **Ribbon**.



3. The cells below will **shift up**.

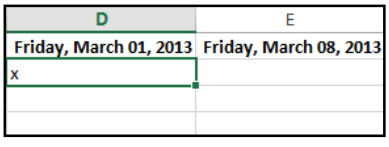


	A	B	C
1	First Name	Middle Name	Last Name
2	Heidi	Joy	Lee
3	Josie	Marie	Gates
4	Wendy	Anne	Crocker
5	Loretta	Susan	Johnson

To copy and paste cell content:

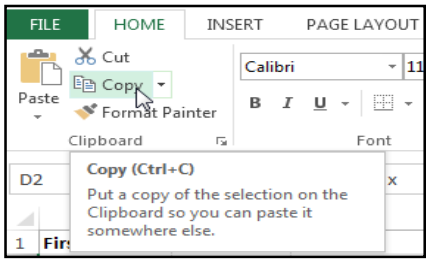
Excel allows you to **copy** content that is already entered into your spreadsheet and **paste** that content to other cells, which can save you time and effort.

1. Select the **cell(s)** you want to **copy**.

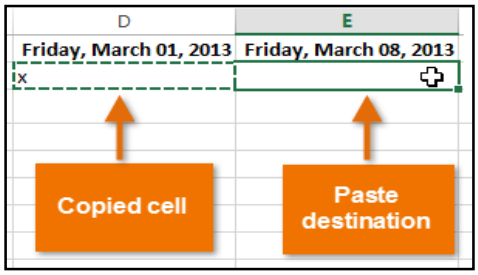


D	E
Friday, March 01, 2013	Friday, March 08, 2013
x	

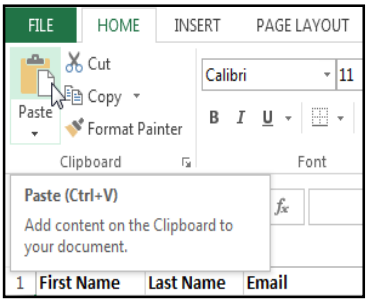
2. Click the **Copy** command on the **Home** tab, or press **Ctrl+C** on your keyboard.



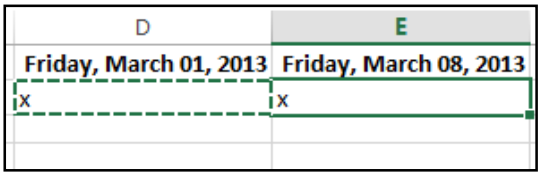
3. Select the **cell(s)** where you want to **paste** the content. The copied cells will now have a **dashed box** around them.



4. Click the **Paste** command on the **Home** tab, or press **Ctrl+V** on your keyboard.



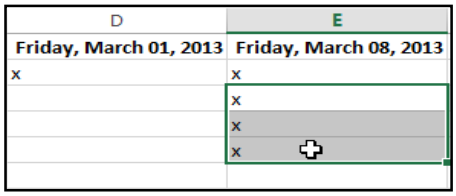
5. The content will be **pasted** into the selected cells.



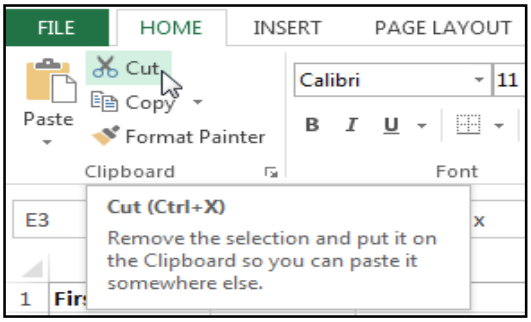
To cut and paste cell content:

Unlike copying and pasting, which **duplicates** cell content, **cutting** allows you to **move** content between cells.

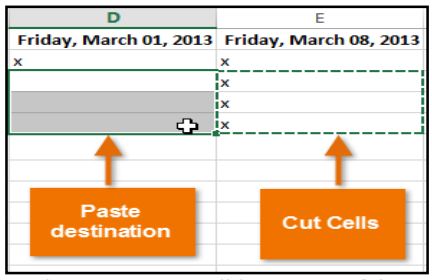
1. Select the **cell(s)** you want to **cut**.



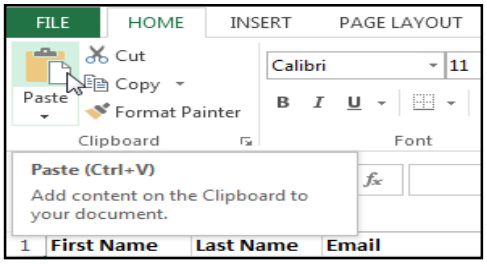
2. Click the **Cut** command on the **Home** tab, or press **Ctrl+X** on your keyboard.



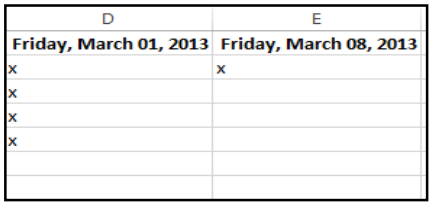
3. Select the cells where you want to **paste** the content. The cut cells will now have a **dashed box** around them.

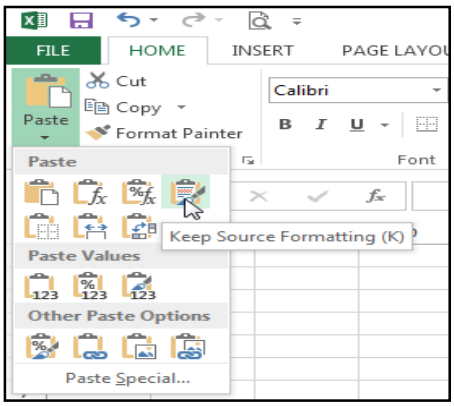


4. Click the **Paste** command on the **Home** tab, or press **Ctrl+V** on your keyboard.



5. The cut content will be **removed** from the original cells and **pasted** into the selected cells.



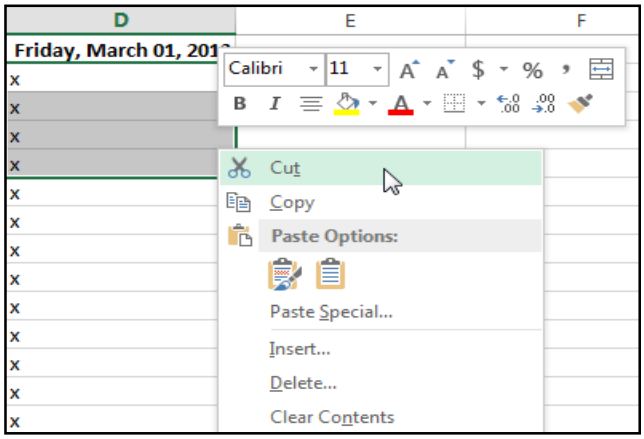


To access more paste options:

You can also access **additional paste options**, which are especially convenient when working with cells that contain **formulas** or **formatting**.

- To access more paste options, click the **drop-down arrow** on the **Paste** command.

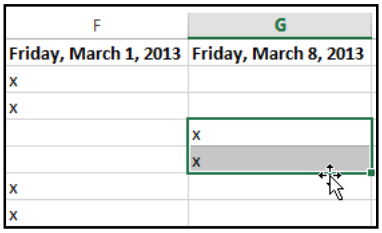
Rather than choose commands from the Ribbon, you can access commands quickly by **right-clicking**. Simply select the **cell(s)** you want to **format**, then right-click the mouse. A **drop-down menu** will appear, where you'll find several **commands** that are also located on the Ribbon.



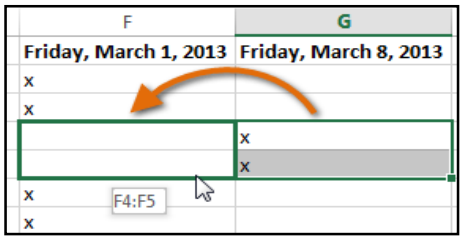
To drag and drop cells:

Rather than cutting, copying, and pasting, you can **drag and drop** cells to move their contents.

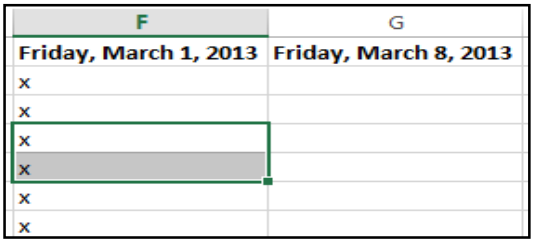
1. Select the **cell(s)** you want to **move**.
2. Hover the mouse over the **border** of the selected cell(s) until the cursor changes from a **white cross** to a **black cross with four arrows**.



3. Click, hold, and drag the cells to the **desired location**.

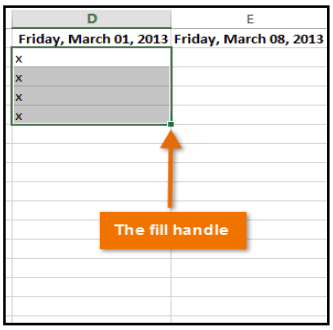


4. Release the mouse, and the cells will be **dropped** in the selected location.



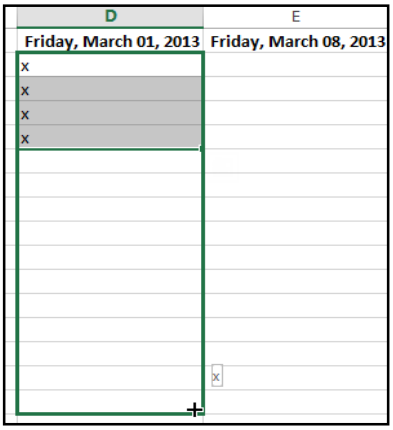
To use the fill handle:

There may be times when you need to copy the content of one cell to several other cells in your worksheet. You could **copy and paste** the content into each cell, but this method would be time consuming. Instead, you can use the **fill handle** to quickly copy and paste content to **adjacent cells** in the same row or column.

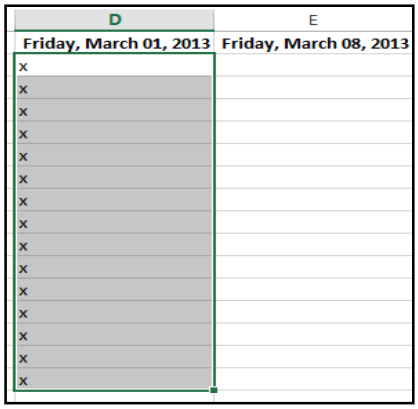


1. Select the **cell(s)** containing the content you want to use. The **fill handle** will appear as a small square in the bottom-right corner of the selected cell(s).

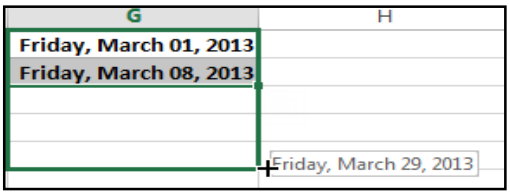
2. Click, hold, and drag the **fill handle** until all of the cells you want to fill are **selected**.



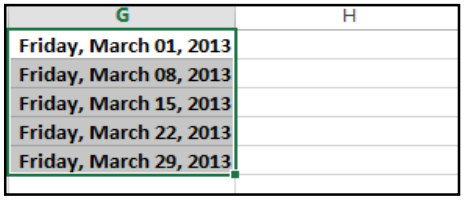
3. Release the mouse to **fill** the selected cells.



To continue a series with the fill handle:

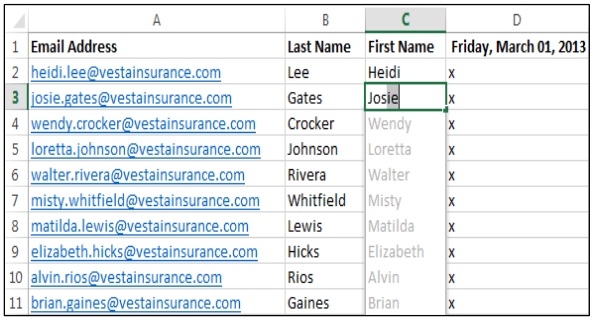


The fill handle can also be used to **continue a series**. Whenever the content of a row or column follows a sequential order, like **numbers (1, 2, 3)** or **days (Monday, Tuesday, Wednesday)**, the fill handle can guess what should come next in the series. In many cases, you may need to select **multiple cells** before using the fill handle to help Excel determine the series order. In our example below, the fill handle is used to extend a series of **dates** in a column.



You can also **double-click** the fill handle instead of clicking and dragging. This can be useful with larger spreadsheets, where clicking and dragging may be awkward.

To use Flash Fill:



	A	B	C	D
1	Email Address	Last Name	First Name	Friday, March 01, 2013
2	heidi.lee@vestainsurance.com	Lee	Heidi	x
3	josie.gates@vestainsurance.com	Gates	Josie	x
4	wendy.crocker@vestainsurance.com	Crocker	Wendy	x
5	loretta.johnson@vestainsurance.com	Johnson	Loretta	x
6	walter.rivera@vestainsurance.com	Rivera	Walter	x
7	misty.whitfield@vestainsurance.com	Whitfield	Misty	x
8	matilda.lewis@vestainsurance.com	Lewis	Matilda	x
9	elizabeth.hicks@vestainsurance.com	Hicks	Elizabeth	x
10	alvin.rios@vestainsurance.com	Rios	Alvin	x
11	brian.gaines@vestainsurance.com	Gaines	Brian	x

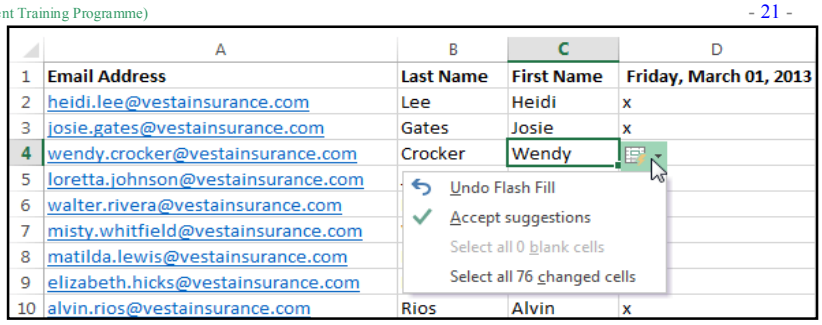
A new feature in Excel 2013, **Flash Fill** can enter data automatically into your worksheet, saving you time and effort. Just like the fill handle, **Flash Fill** can guess what type of information you're entering into your worksheet. In the example below, we'll use Flash Fill to create a list of **first names** using a list of existing **email addresses**.

1. Enter the desired information into your worksheet. A **Flash Fill preview** will appear below the selected cell whenever Flash Fill is available.

2. Press **Enter**. The Flash Fill data will be **added** to the worksheet.

	A	B	C	D
1	Email Address	Last Name	First Name	Friday, March 01, 2013
2	heidi.lee@vestainsurance.com	Lee	Heidi	x
3	josie.gates@vestainsurance.com	Gates	Josie	x
4	wendy.crocker@vestainsurance.com	Crocker	Wendy	
5	loretta.johnson@vestainsurance.com	Johnson	Loretta	x
6	walter.rivera@vestainsurance.com	Rivera	Walter	x
7	misty.whitfield@vestainsurance.com	Whitfield	Misty	x
8	matilda.lewis@vestainsurance.com	Lewis	Matilda	x
9	elizabeth.hicks@vestainsurance.com	Hicks	Elizabeth	x
10	alvin.rios@vestainsurance.com	Rios	Alvin	x
11	brian.gaines@vestainsurance.com	Gaines	Brian	x

To **modify** or **undo** Flash Fill, click the **Flash Fill button** next to recently added Flash Fill data.

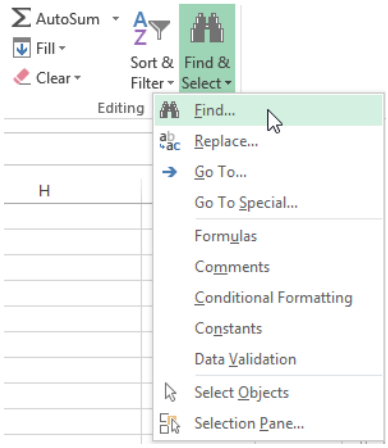


Find and Replace

When working with a lot of data in Excel, it can be difficult and time consuming to locate specific information. You can easily search your workbook using the **Find** feature, which also allows you to modify content using the **Replace** feature.

To find content:

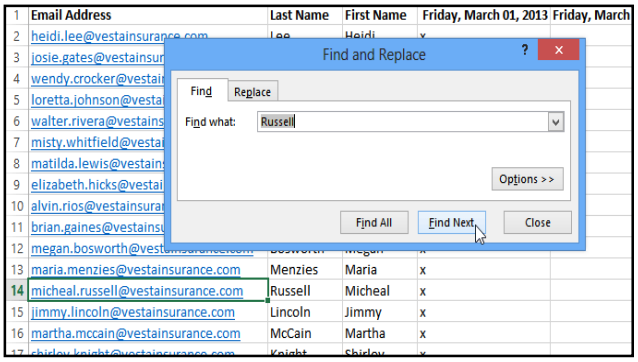
In our example, we'll use the Find command to locate a specific name in a long list of employees.



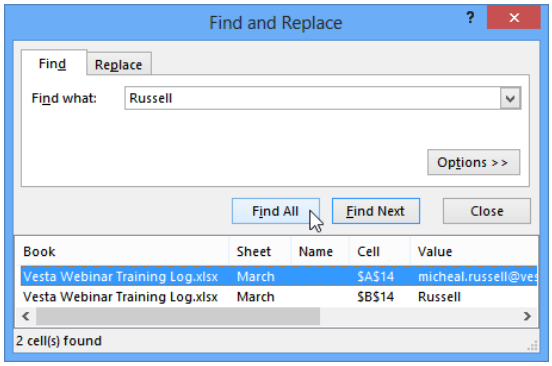
1. From the **Home** tab, click the **Find and Select** command, then select **Find...** from the drop-down menu.

2. The **Find and Replace** dialog box will appear. Enter the **content** you want to find. In our example, we'll type the employee's name.

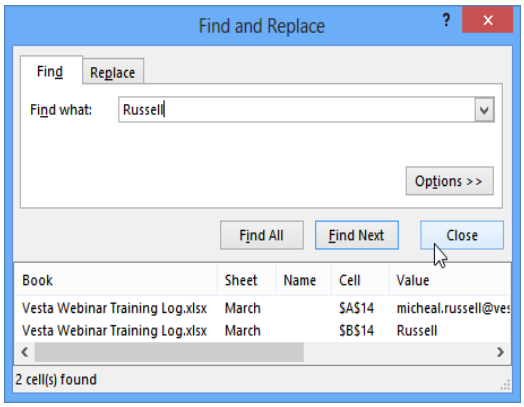
3. Click **Find Next**. If the content is found, the cell containing that content will be **selected**.



4. Click **Find Next** to find further instances or **Find All** to see every instance of the search term.

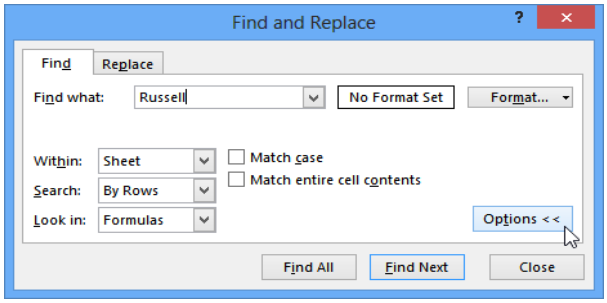


5. When you are finished, click **Close** to exit the Find and Replace dialog box.



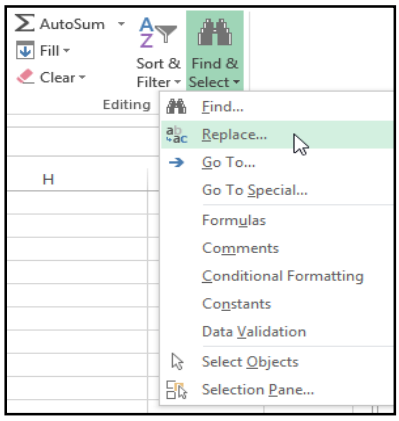
You can also access the Find command by pressing **Ctrl+F** on your keyboard.

Click **Options** to see advanced search criteria in the Find and Replace dialog box.



To replace cell content:

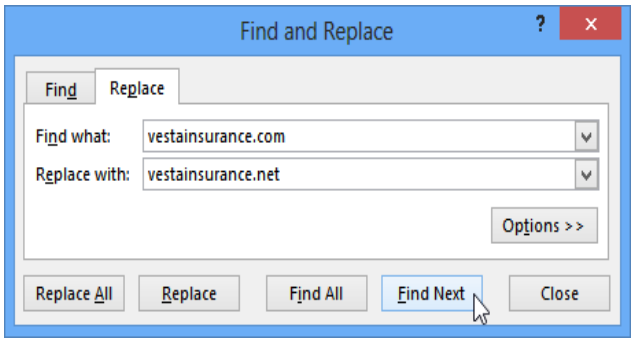
At times, you may discover that you've repeatedly made a mistake throughout your workbook (such as misspelling someone's name), or that you need to exchange a particular word or phrase for another. You can use Excel's **Find and Replace** feature to make quick revisions. In our example, we'll use Find and Replace to correct a list of email addresses.



1. From the **Home** tab, click the **Find and Select** command, then select **Replace...** from the drop-down menu.

2. The **Find and Replace** dialog box will appear. Type the text you want to find in the **Find what:** field.

3. Type the text you want to replace it with in the **Replace with**: field, then click **Find Next**.

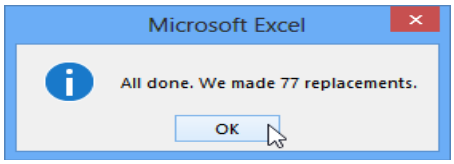


4. If the content is found, the cell containing that content will be **selected**.

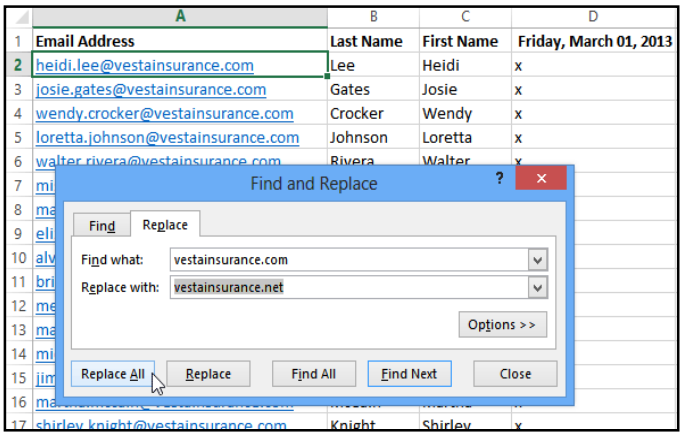
5. **Review** the text to make sure you want to replace it.

6. If you want to replace it, select one of the **replace** options:
   - **Replace** will replace individual instances.
   - **Replace All** will replace every instance of the text throughout the workbook. In our example, we'll choose this option to save time.

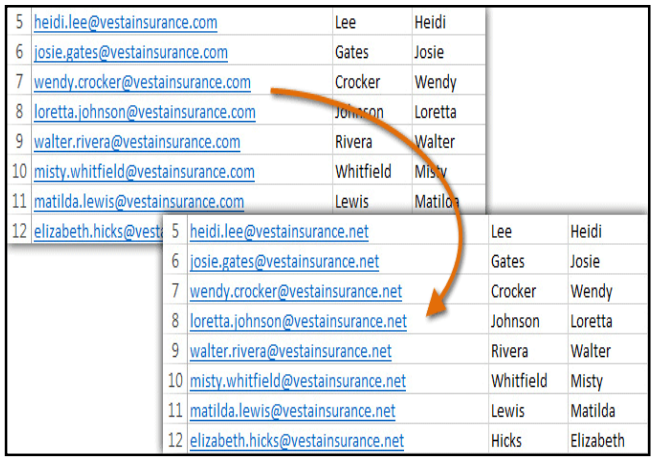
7. A dialog box will appear, confirming the number of replacements made. Click **OK** to continue.

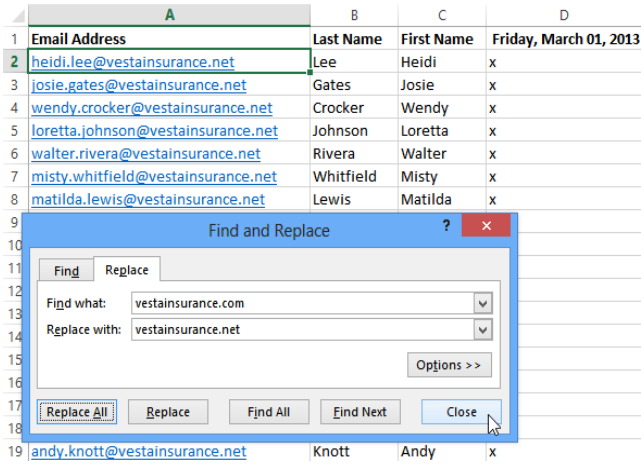


8. The selected cell content will be **replaced**.



9. When you are finished, click **Close** to exit the Find and Replace dialog box.





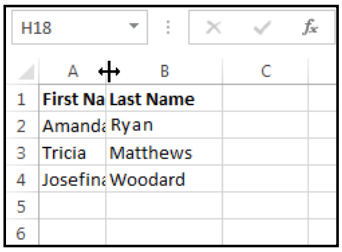
Chapter-5 Modifying Columns, Rows, and Cells

Introduction

By default, every row and column of a new workbook is set to the same **height** and **width**. Excel allows you to modify column width and row height in different ways, including **wrapping text** and **merging cells**.

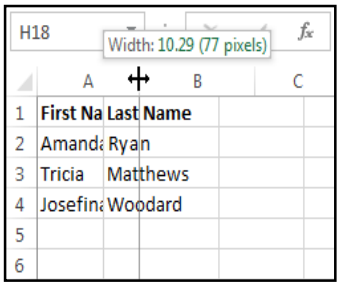
To modify column width:

In our example below, some of the content in column A cannot be displayed. We can make all of this content visible by changing the **width** of column A.

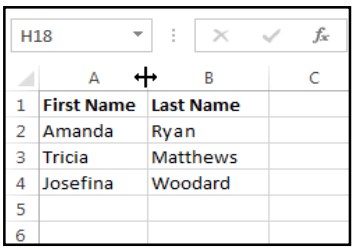


1. Position the mouse over the **column line** in the **column heading** so the **white cross** becomes a **double arrow**.

2. Click, hold, and drag the mouse to **increase** or **decrease** the column width.



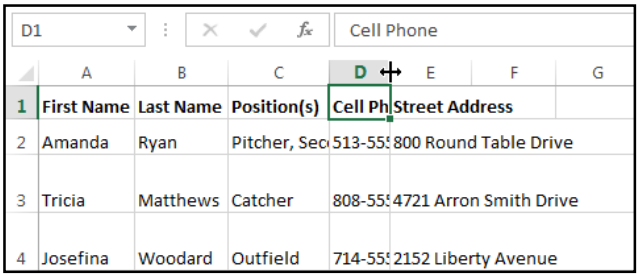
3. Release the mouse. The **column width** will be changed.



If you see **pound signs** (########) in a cell, it means the column is not wide enough to display the cell content. Simply **increase the column width** to show the cell content.

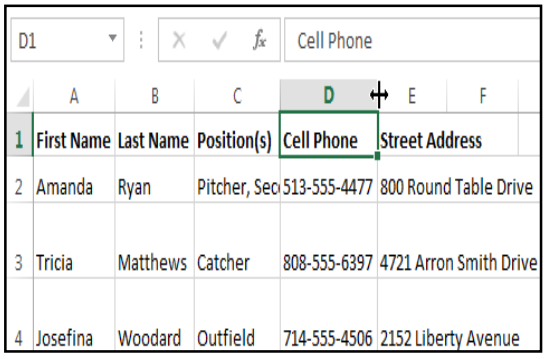
To AutoFit column width:

The **AutoFit** feature will allow you to set a column's width to fit its content **automatically**.

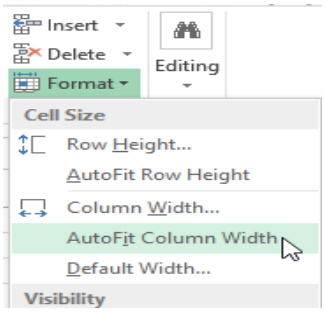


1. Position the mouse over the **column line** in the **column heading** so the **white cross** becomes a **double arrow**.

2. Double-click the mouse. The **column width** will be changed automatically to fit the content.



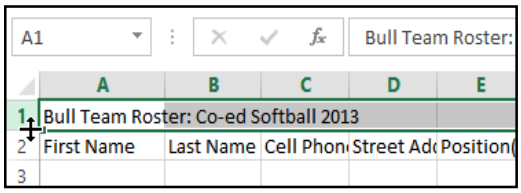
You can also AutoFit the width for several columns at the same time. Simply select the columns you want to AutoFit, then select the **AutoFit Column Width** command from the **Format** drop-down menu on the **Home** tab. This method can also be used for **row height**.

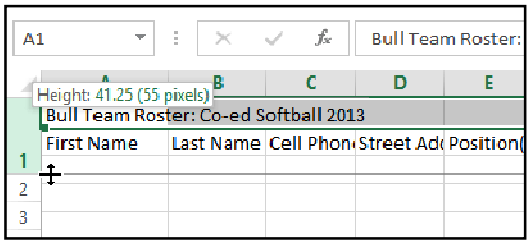


To modify row height:

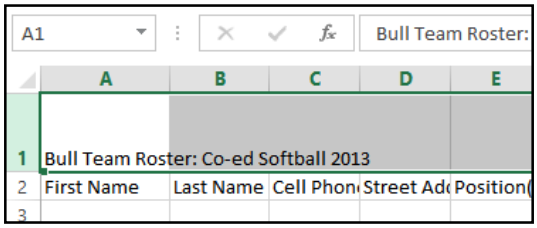
1. Position the **cursor** over the **row line** so the **white cross** becomes a **double arrow**.

2. Click, hold, and drag the mouse to **increase** or **decrease** the row height.



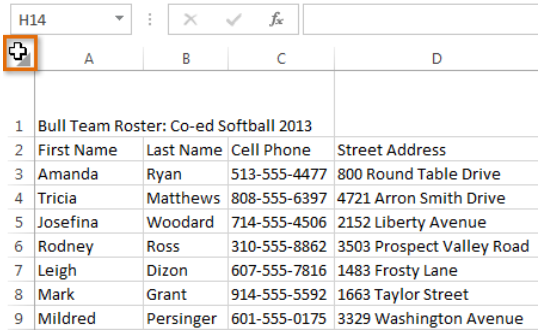


3. Release the mouse. The **height** of the selected row will be changed.



To modify all rows or columns:

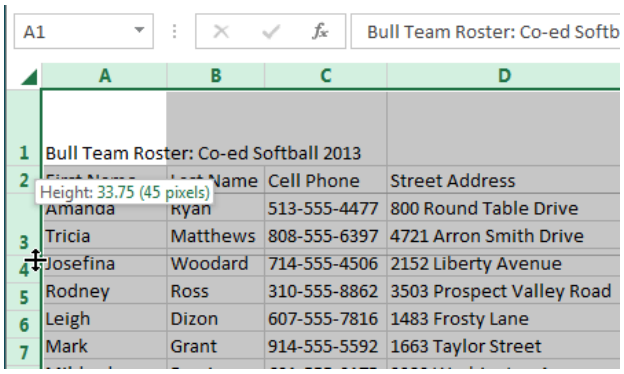
Rather than resizing rows and columns individually, you can modify the height and width of every row and column at the same time. This method allows you to set a **uniform size** for every row and column in your worksheet. In our example, we will set a **uniform row height**.



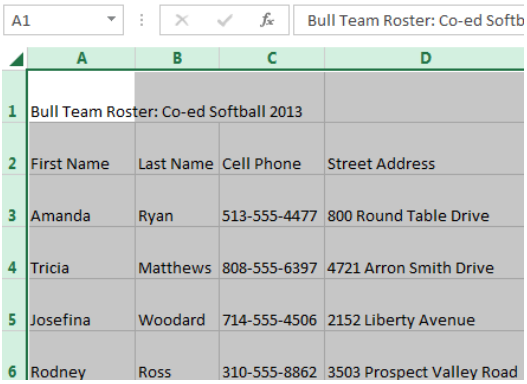
1. Locate and click the **Select All** button just below the **formula bar** to select every cell in the worksheet.

2. Position the mouse over a **row line** so the **white cross** becomes a **double arrow**.

3. Click, hold, and drag the mouse to **increase** or **decrease** the row height.



4. Release the mouse when you are satisfied with the **new row height** for the worksheet.

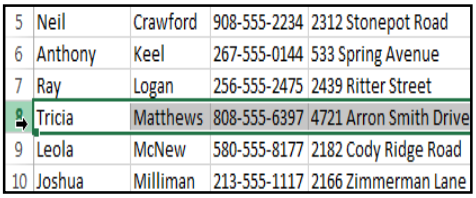


Inserting, deleting, moving, and hiding rows and columns

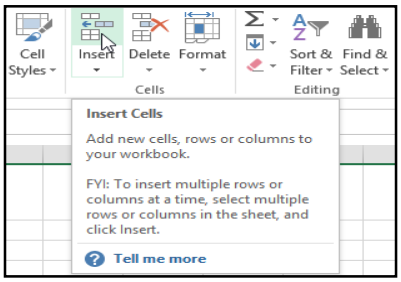
After you've been working with a workbook for a while, you may find that you want to **insert new** columns or rows, **delete** certain rows or columns, **move** them to a different location in the worksheet, or even **hide** them.

To insert rows:

1. Select the **row heading** below where you want the new row to appear. For example, if you want to insert a row between rows 7 and 8, select row 8.



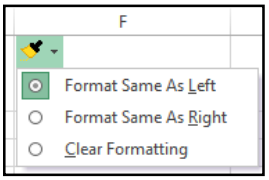
2. Click the **Insert** command on the **Home** tab.



3. The **new row** will appear **above** the selected row.

5	Neil	Crawford	908-555-2234	2312 Stonepot Road
6	Anthony	Keel	267-555-0144	533 Spring Avenue
7	Ray	Logan	256-555-2475	2439 Ritter Street
8				
9	cia	Matthews	808-555-6397	4721 Arron Smith Drive
10	Leola	McNew	580-555-8177	2182 Cody Ridge Road

When inserting new rows, columns, or cells, you will see the **Insert Options** button next to the inserted cells. This button allows you to choose how Excel formats these cells. By default, Excel formats inserted rows with the same formatting as the cells in the row above. To access more options, hover your mouse over the **Insert Options** button, then click the **drop-down arrow**.

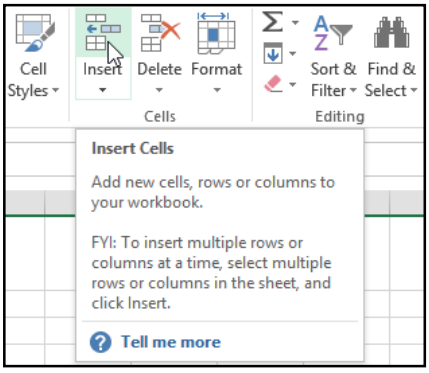


To insert columns:

1. Select the **column heading** to the right of where you want the new column to appear. For example, if you want to insert a column between columns D and E, select column E.

2. Click the **Insert** command on the **Home** tab.

D	E	F
Street Address	Position(s)	
800 Round Table Drive	Pitcher, Second base	
4721 Arron Smith Drive	Catcher	
2152 Liberty Avenue	Outfield	
3503 Prospect Valley Road	First base	
1483 Frosty Lane	Third base	
1663 Taylor Street	Shortstop	
3329 Washington Avenue	First base, pitcher	
1736 Broad Street	DH	
2937 Earnhardt Drive	Second base	
232 Timber Oak Drive	Right field	
4072 Nelm Street	Third Base	
2182 Cody Ridge Road	Pitcher	
1001 Cerullo Road	Second base	



3. The **new column** will appear **to the left** of the selected column.

D	E	F
Street Address		Position(s)
800 Round Table Drive		Pitcher, Second base
4721 Arron Smith Drive		Catcher
2152 Liberty Avenue		Outfield
3503 Prospect Valley Road		First base
1483 Frosty Lane		Third base
1663 Taylor Street		Shortstop
3329 Washington Avenue		First base, pitcher
1736 Broad Street		DH
2937 Earnhardt Drive		Second base
232 Timber Oak Drive		Right field
4072 Nelm Street		Third Base
2182 Cody Ridge Road		Pitcher
1001 Cerullo Road		Second base
9 Tenmile Road		Third base
1386 Patterson Street		Outfield, catcher
3990 Pretty View Lane		Left field

When inserting rows and columns, make sure you select the entire row or column by clicking the **heading.** If you select only a cell in the row or column, the **Insert** command will only insert a new cell.

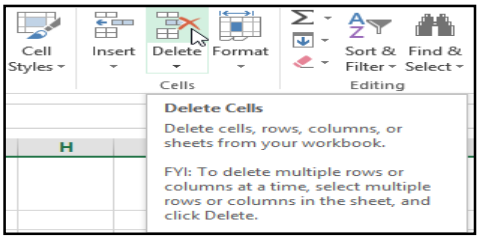
To delete rows:

It's easy to **delete** any row that you no longer need in your workbook.

5	Josefina	Woodard	714-555-4506	2152 Liberty Avenue
6	Rodney	Ross	310-555-8862	3503 Prospect Valley Road
7	Leigh	Dizon	607-555-7816	1483 Frosty Lane
8	Mark	Grant	914-555-5592	1663 Taylor Street
9	Mildred	Persinger	601-555-0175	3329 Washington Avenue
10	Dwayne	Patnode	205-555-3783	1736 Broad Street
11	Bonnie	Benjamin	502-555-1212	2937 Earnhardt Drive

1. Select the **row(s)** you want to delete. In our example, we'll select **rows 6-8**.

2. Click the **Delete** command on the **Home** tab.



3. The **selected row(s)** will be deleted, and the rows below will **shift up**. In our example, **rows 9-11** are now **rows 6-8**.

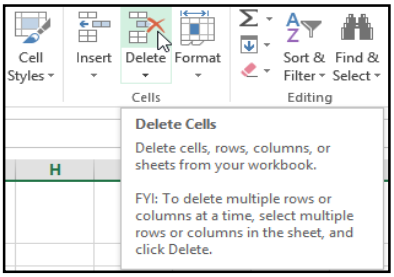
5	Josefina	Woodard	714-555-4506	2152 Liberty Avenue
6	Mildred	Persinger	601-555-0175	3329 Washington Avenue
7	Dwayne	Patnode	205-555-3783	1736 Broad Street
8	Bonnie	Benjamin	502-555-1212	2937 Earnhardt Drive
9	Eva	Ramer	805-555-8514	232 Timber Oak Drive
10	Carol	Pena	571-555-0704	4072 Nelm Street
11	Leola	McNew	580-555-8177	2182 Cody Ridge Road

To delete columns:

1. Select the **columns(s)** you want to delete. In our example, we'll select **column E**.

D	E	F
Street Address	Zip Code	Position(s)
800 Round Table Drive	27606	Pitcher, Second base
4721 Arron Smith Drive	27704	Catcher
2152 Liberty Avenue	27615	Outfield
3329 Washington Avenue	27513	First base, pitcher
1736 Broad Street	27613	DH
2937 Earnhardt Drive	27606	Second base
232 Timber Oak Drive	27704	Right field
4072 Nelm Street	27615	Third Base
2182 Cody Ridge Road	27513	Pitcher
1001 Cerullo Road	27613	Second base
9 Tenmile Road	27606	Third base
1386 Patterson Street	27704	Outfield, catcher
3990 Pretty View Lane	27615	Left field
533 Spring Avenue	27513	Shortstop, pinch runner
2723 Nelm Street	27613	Left field, Center field

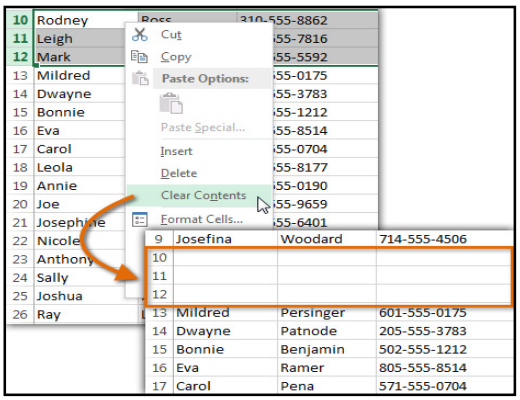
2. Click the **Delete** command on the **Home** tab.



3. The **selected columns(s)** will be deleted, and the columns to the right will **shift left**. In our example, **Column F** is now **Column E.**

D	E
Street Address	Position(s)
800 Round Table Drive	Pitcher, Second base
4721 Arron Smith Drive	Catcher
2152 Liberty Avenue	Outfield
3329 Washington Avenue	First base, pitcher
1736 Broad Street	DH
2937 Earnhardt Drive	Second base
232 Timber Oak Drive	Right field
4072 Nelm Street	Third Base
2182 Cody Ridge Road	Pitcher
1001 Cerullo Road	Second base
9 Tenmile Road	Third base
1386 Patterson Street	Outfield, catcher
3990 Pretty View Lane	Left field
533 Spring Avenue	Shortstop, pinch runner
2723 Nelm Street	Left field, Center field

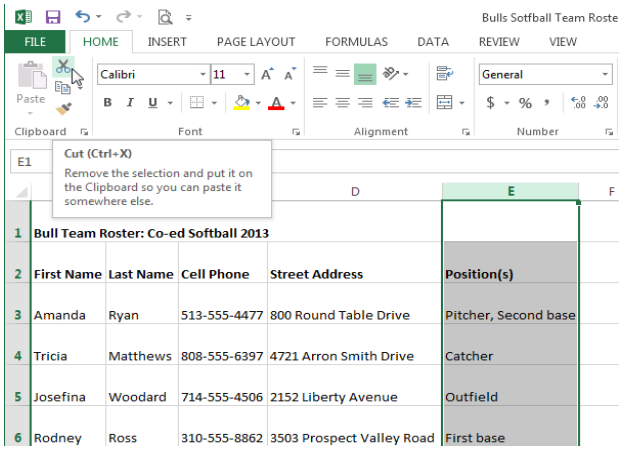
It's important to understand the difference between **deleting** a row or column and simply **clearing its contents**. If you want to remove the **content** of a row or column without causing others to shift, right-click a **heading**, then select **Clear Contents** from the drop-down menu.

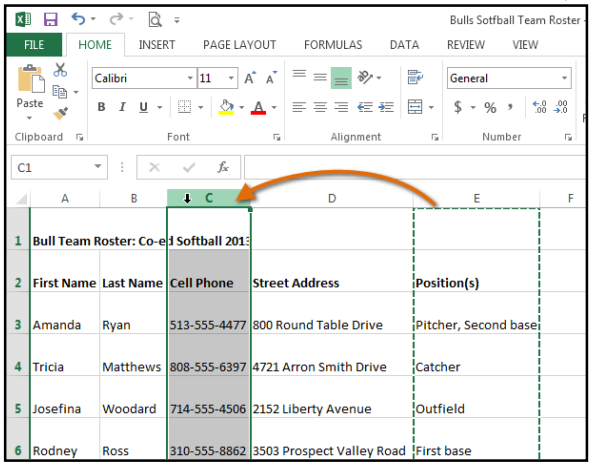


To move a row or column:

Sometimes you may want to **move** a column or row to rearrange the content of your worksheet. In our example we'll move a column, but you can move a row in the same way.

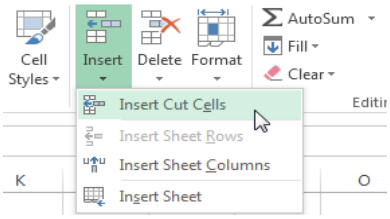
1. Select the desired **column heading** for the column you want to move, then click the **Cut** command on the **Home** tab or press **Ctrl+X** on your keyboard.



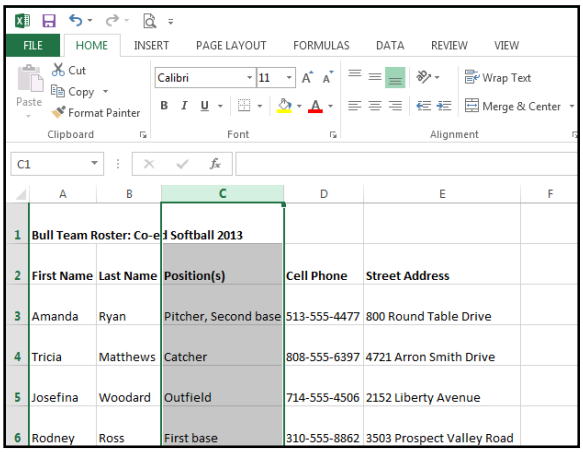


2. Select the **column heading** to the right of where you want to move the column. For example, if you want to move a column between columns B and C, select column C.

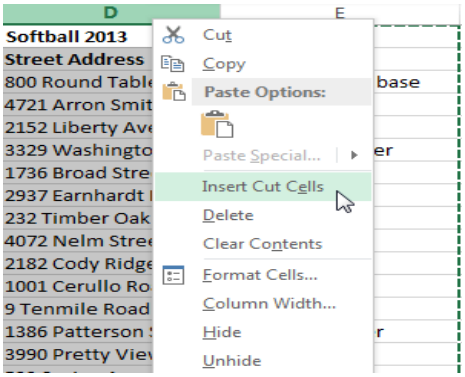
3. Click the **Insert** command on the **Home** tab, then select **Insert Cut Cells** from the drop-down menu.



4. The column will be **moved** to the selected location and the columns to the right will **shift right**.



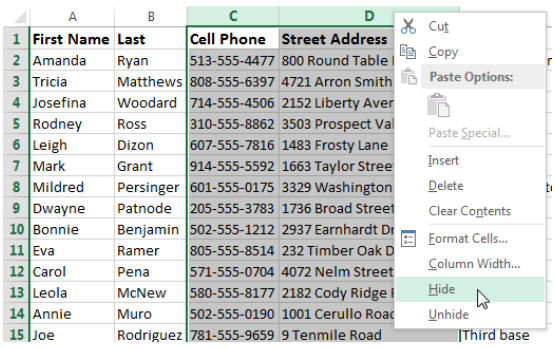
You can also access the **Cut** and **Insert** commands by right-clicking the mouse and then selecting the **desired commands** from the drop-down menu.



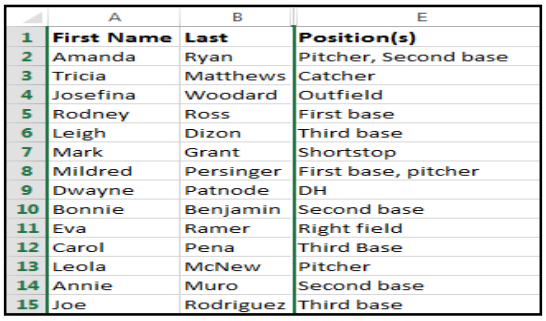
To hide and unhide a row or column:

At times, you may want to **compare** certain rows or columns without changing the organization of your worksheet. Excel allows you to **hide** rows and columns as needed. In our example, we'll hide columns C and D to make it easier to compare columns A, B, and E.

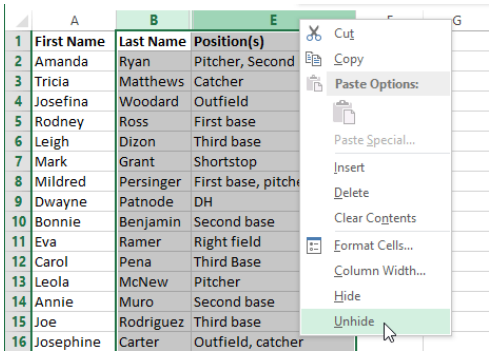
1. Select the **column(s)** you want to **hide**, right-click the mouse, then select **Hide** from the **formatting** menu.



2. The columns will be **hidden**. The **green column line** indicates the location of the hidden columns.



3. To **unhide** the columns, select the columns to the **left** and **right** of the hidden columns (in other words, the columns on **both sides** of the hidden columns). In our example, we'll select columns **B** and **E**.
4. Right-click the mouse, then select **Unhide** from the **formatting** menu. The hidden columns will reappear.

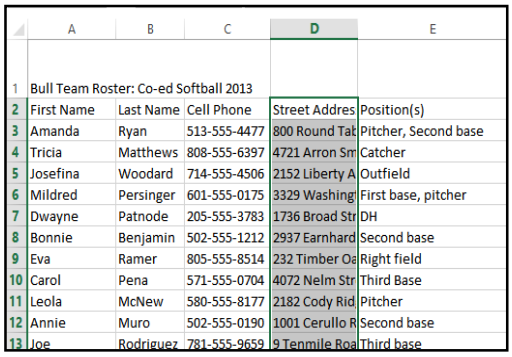


Wrapping text and merging cells

Whenever you have too much cell content to be displayed in a single cell, you may decide to **wrap the text** or **merge** the cell rather than resize a column. Wrapping the text will automatically modify a cell's **row height**, allowing cell contents to be displayed **on multiple lines**. Merging allows you to combine a cell with adjacent empty cells to create **one large cell**.

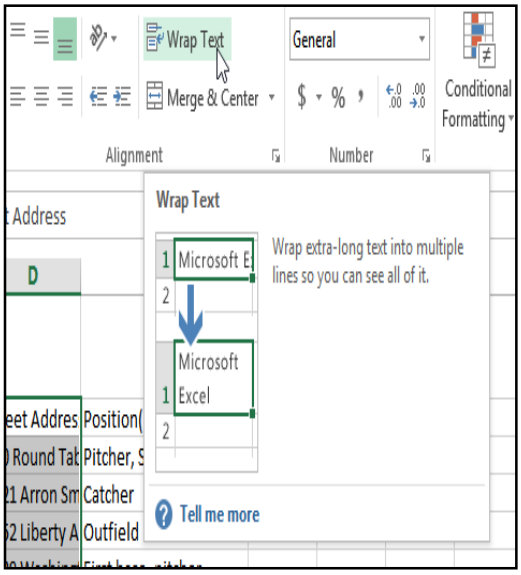
To wrap text in cells:

In our example below, we'll wrap the text of the cells in column D so the entire address can be displayed.

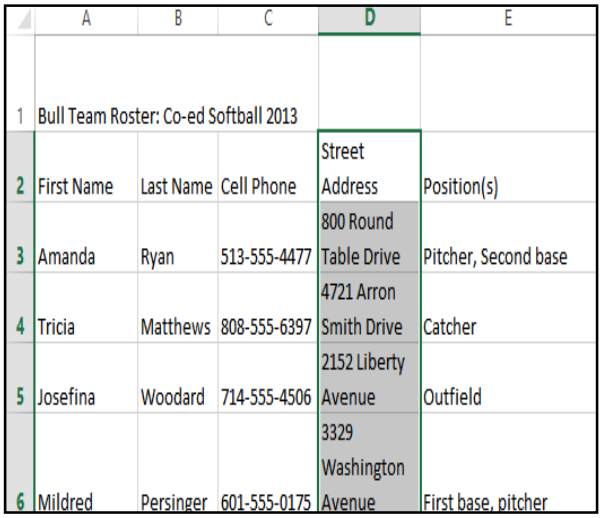


	A	B	C	D	E
1	Bull Team Roster: Co-ed Softball 2013				
2	First Name	Last Name	Cell Phone	Street Addres	Position(s)
3	Amanda	Ryan	513-555-4477	800 Round Tab	Pitcher, Second base
4	Tricia	Matthews	808-555-6397	4721 Arron Sm	Catcher
5	Josefina	Woodard	714-555-4506	2152 Liberty A	Outfield
6	Mildred	Persinger	601-555-0175	3329 Washing	First base, pitcher
7	Dwayne	Patnode	205-555-3783	1736 Broad Str	DH
8	Bonnie	Benjamin	502-555-1212	2937 Earnhard	Second base
9	Eva	Ramer	805-555-8514	232 Timber Oa	Right field
10	Carol	Pena	571-555-0704	4072 Nelm Str	Third Base
11	Leola	McNew	580-555-8177	2182 Cody Rid	Pitcher
12	Annie	Muro	502-555-0190	1001 Cerullo R	Second base
13	Joe	Rodriguez	781-555-9659	9 Tenmile Roa	Third base

1. Select the cells you want to wrap. In this example, we'll select the cells in **column D**.
2. Select the **Wrap Text** command on the **Home** tab.



3. The text in the selected cells will be **wrapped**.



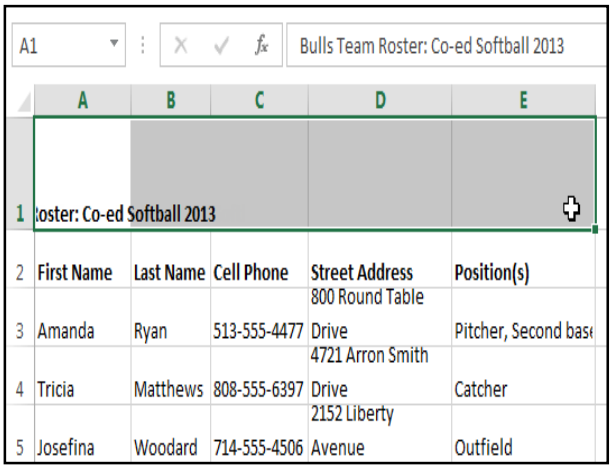
	A	B	C	D	E
1	Bull Team Roster: Co-ed Softball 2013				
2	First Name	Last Name	Cell Phone	Street Address	Position(s)
3	Amanda	Ryan	513-555-4477	800 Round Table Drive	Pitcher, Second base
4	Tricia	Matthews	808-555-6397	4721 Arron Smith Drive	Catcher
5	Josefina	Woodard	714-555-4506	2152 Liberty Avenue	Outfield
6	Mildred	Persinger	601-555-0175	3329 Washington Avenue	First base, pitcher

Click the **Wrap Text** command again to **unwrap** the text.

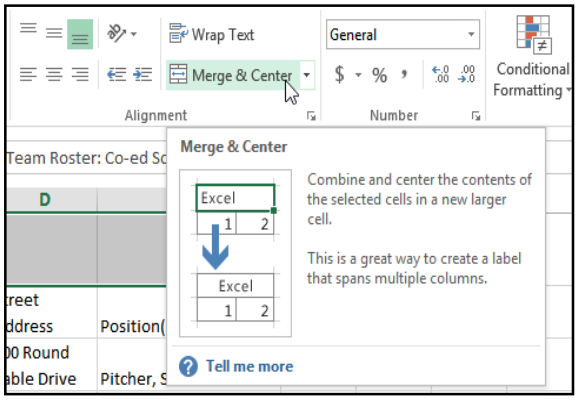
To merge cells using the Merge & Center command:

In our example below, we'll merge cell A1 with cells B1:E1 to create a title heading for our worksheet.

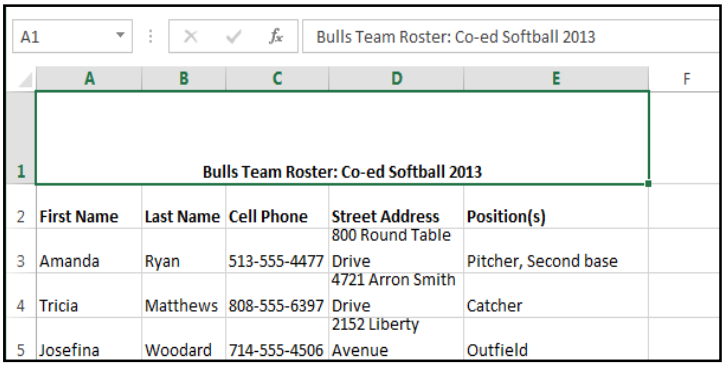
1. Select the **cell range** you want to merge.



2. Select the **Merge & Center** command on the **Home** tab.



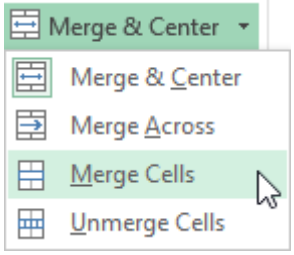
3. The selected cells will be **merged**, and the text will be **centered**.



To access more merge options:

Click the drop-down arrow next to the **Merge & Center** command on the **Home** tab. The **Merge** drop-down menu will appear. From here, you can choose to:

- **Merge & Center**: Merges the selected cells into **one cell** and **centers** the text
- **Merge Across**: Merges the selected cells into **larger cells** while keeping each **row** separate
- **Merge Cells**: Merges the selected cells into one cell but **does not cente**r the text
- **Unmerge Cells**: Unmerges selected cells



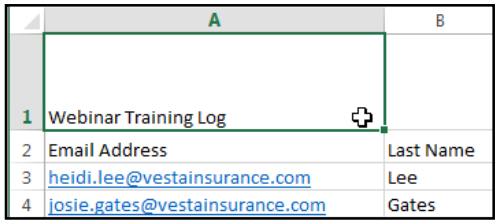
Chapter-6 Formatting Cells

Introduction

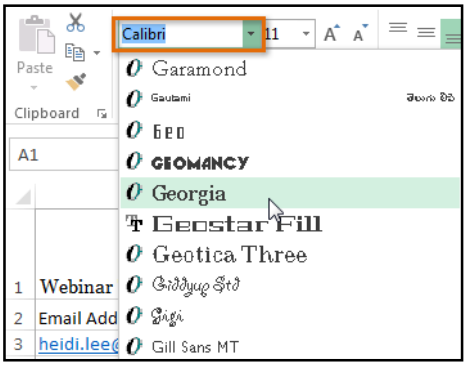
All cell content uses the same **formatting** by default, which can make it difficult to read a workbook with a lot of information. Basic formatting can customize the **look and feel** of your workbook, allowing you to draw attention to specific sections and making your content easier to view and understand. You can also apply **number formatting** to tell Excel exactly what type of data you're using in the workbook, such as percentages (%), currency ($), and so on.

To change the font:

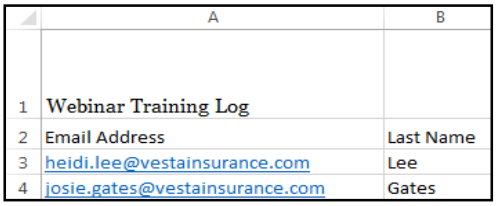
By default, the font of each new workbook is set to Calibri. However, Excel provides many other fonts you can use to customize your cell text. In the example below, we'll format our **title cell** to help distinguish it from the rest of the worksheet.



1. Select the **cell(s)** you want to modify.
2. Click the **drop-down arrow** next to the **Font** command on the **Home** tab. The **Font** drop-down menu will appear.
3. Select the desired **font**. A **live preview** of the new font will appear as you hover the mouse over different options. In our example, we'll choose **Georgia**.

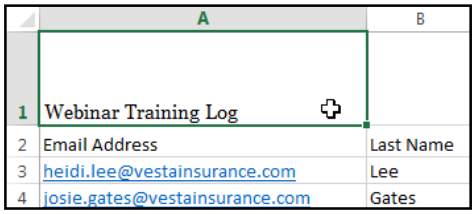


4. The text will change to the **selected font**.

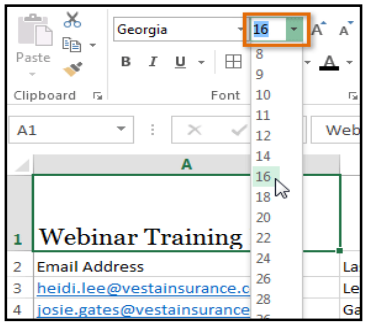


When creating a workbook in the workplace, you'll want to select a font that is easy to read. Along with Calibri, standard reading fonts include Cambria, Times New Roman, and Arial.

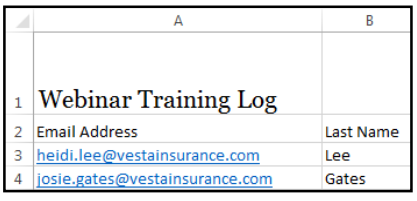
To change the font size:



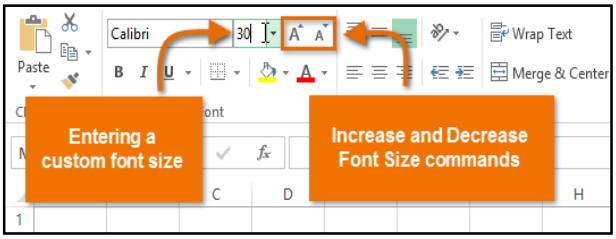
1. Select the **cell(s)** you want to modify.
2. Click the **drop-down arrow** next to the **Font Size** command on the **Home** tab. The **Font Size** drop-down menu will appear.
3. Select the desired **font size**. A **live preview** of the new font size will appear as you hover the mouse over different options. In our example, we will choose **16** to make the text **larger**.



4. The text will change to the **selected font size**.

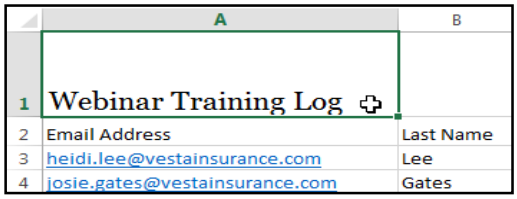


You can also use the **Increase Font Size** and **Decrease Font Size** commands or enter a **custom font size** using your keyboard.

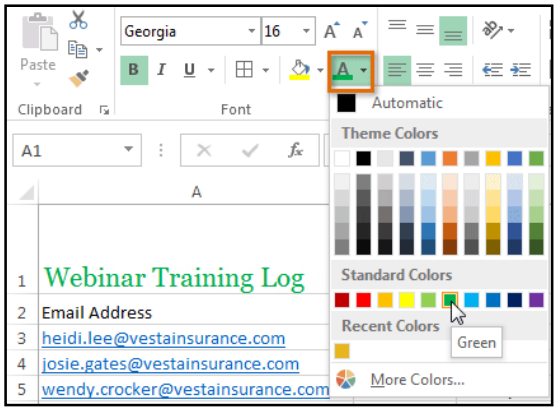


To change the font color:

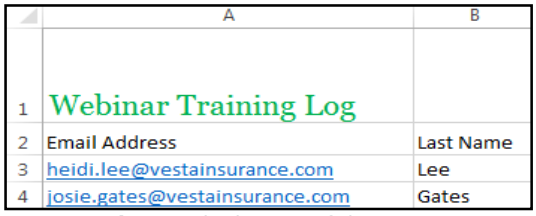
1. Select the **cell(s)** you want to modify.



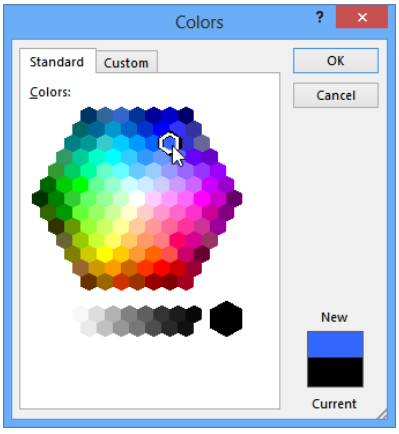
2. Click the **drop-down arrow** next to the **Font Color** command on the **Home** tab. The **Color** menu will appear.
3. Select the desired **font color**. A **live preview** of the new font color will appear as you hover the mouse over different options. In our example, we'll choose **Green**.



4. The text will change to the **selected font color**.

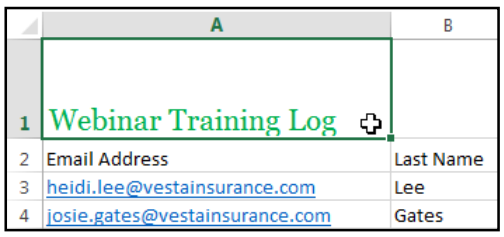


Select **More Colors** at the bottom of the menu to access additional color options.

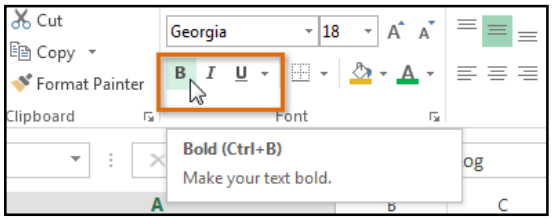


To use the Bold, Italic, and Underline commands:

1. Select the **cell(s)** you want to modify.



2. Click the Bold (**B**), Italic (*I*), or Underline (U) command on the **Home** tab. In our example, we'll make the selected cells **bold**.



3. The **selected style** will be applied to the text.

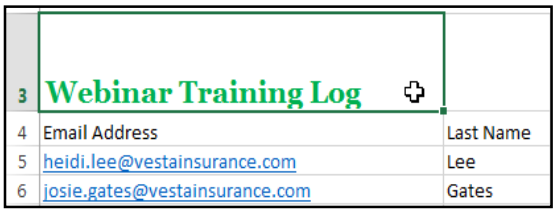
You can also press **Ctrl+B** on your keyboard to make selected text **bold**, **Ctrl+I** to apply **italics**, and **Ctrl+U**to apply an **underline**.

Text alignment

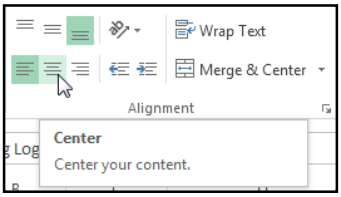
By default, any text entered into your worksheet will be aligned to the bottom-left of a cell, while any numbers will be aligned to the bottom-right. Changing the **alignment** of your cell content allows you to choose how the content is displayed in any cell, which can make your cell content easier to read.

To change horizontal text alignment:

In our example below, we'll modify the alignment of our **title** cell to create a more polished look and further distinguish it from the rest of the worksheet.



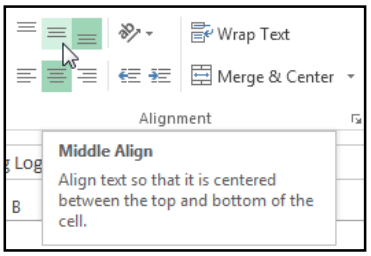
1. Select the **cell(s)** you want to modify.
2. Select one of the three **horizontal alignment** commands on the **Home** tab. In our example, we'll choose **Center Align**.



3. The text will **realign**.

To change vertical text alignment:

1. Select the **cell(s)** you want to modify.
2. Select one of the three **vertical alignment** commands on the **Home** tab. In our example, we'll choose **Middle Align**.



3. The text will **realign**.

You can apply **both** vertical and horizontal alignment settings to any cell.

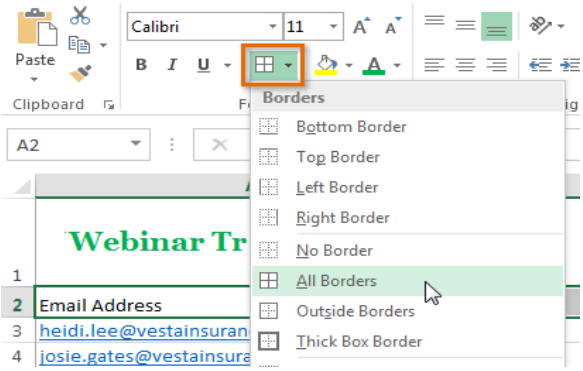
Cell borders and fill colors

Cell borders and **fill colors** allow you to create clear and defined boundaries for different sections of your worksheet. Below, we'll add cell borders and fill color to our **header cells** to help distinguish them from the rest of the worksheet.

To add a border:

1. Select the **cell(s)** you want to modify.
2. Click the **drop-down arrow** next to the **Borders** command on the **Home** tab. The **Borders** drop-down menu will appear.

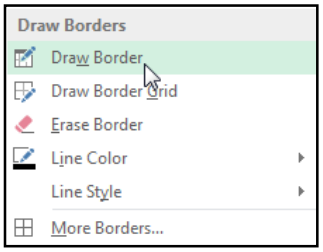
3. Select the **border style** you want to use. In our example, we will choose to display **All Borders**.



4. The **selected border style** will appear.

	Email Address	Last Name	First Name
Webinar Training Log			
5	heidi.lee@vestainsurance.com	Lee	Heidi
6	josie.gates@vestainsurance.com	Gates	Josie

You can draw borders and change the **line style** and **color** of borders with the **Draw Borders** tools at the bottom of the Borders drop-down menu.

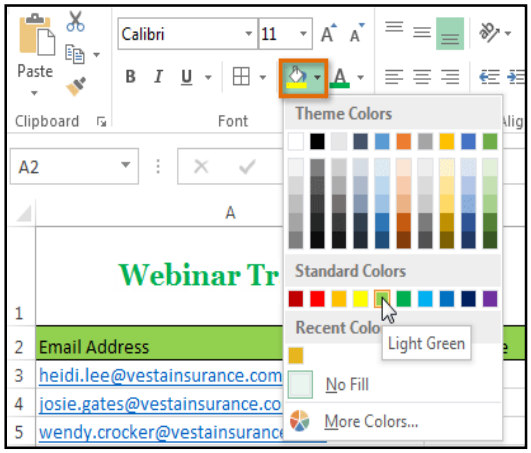


To add a fill color:

1. Select the **cell(s)** you want to modify.

	Email Address	Last Name	First Name
Webinar Training Log			
5	heidi.lee@vestainsurance.com	Lee	Heidi
6	josie.gates@vestainsurance.com	Gates	Josie

2. Click the **drop-down arrow** next to the **Fill Color** command on the **Home** tab. The **Fill Color** menu will appear.
3. Select the **fill color** you want to use. A **live preview** of the new fill color will appear as you hover the mouse over different options. In our example, we'll choose **Light Green**.

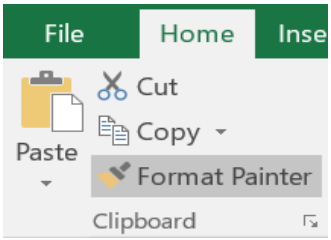


4. The **selected fill color** will appear in the selected cells.

	Email Address	Last Name	First Name
Webinar Training Log			
5	heidi.lee@vestainsurance.com	Lee	Heidi
6	josie.gates@vestainsurance.com	Gates	Josie

Format Painter

If you want to copy formatting from one cell to another, you can use the **Format Painter** command on the **Home** tab. When you click the Format Painter, it will copy all of the formatting from the selected cell. You can then **click and drag** over any cells you want to paste the formatting to.

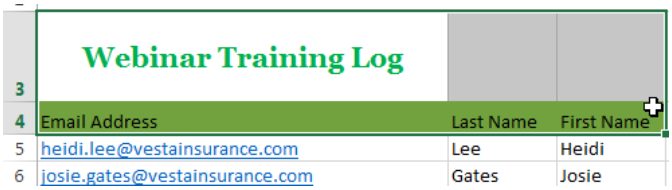


Cell styles

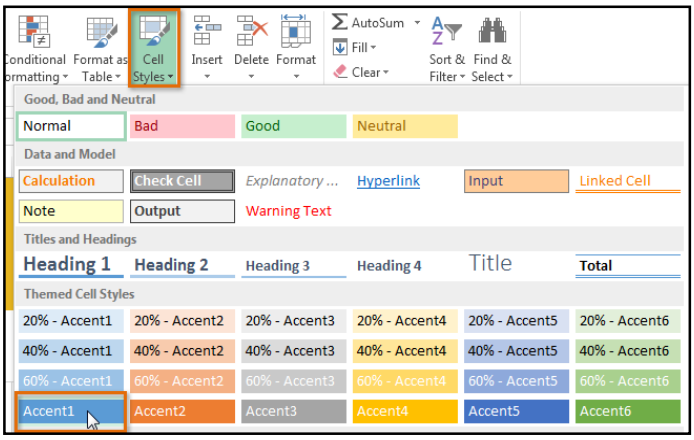
Instead of formatting cells manually, you can use Excel's **predesigned cell styles**. Cell styles are a quick way to include professional formatting for different parts of your workbook, such as **titles** and **headers**.

To apply a cell style:

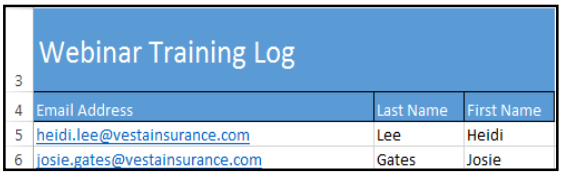
In our example, we'll apply a new cell style to our existing **title** and **header cells**.



1. Select the **cell(s)** you want to modify.
2. Click the **Cell Styles** command on the **Home** tab, then choose the **desired style** from the drop-down menu. In our example, we'll choose **Accent 1**.



3. The **selected cell style** will appear.



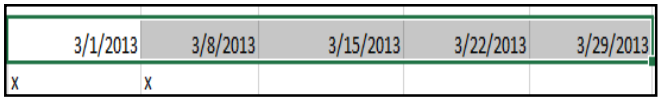
Applying a cell style will **replace** any existing cell formatting except for text alignment. You may not want to use cell styles if you've already added a lot of formatting to your workbook.

Formatting text and numbers

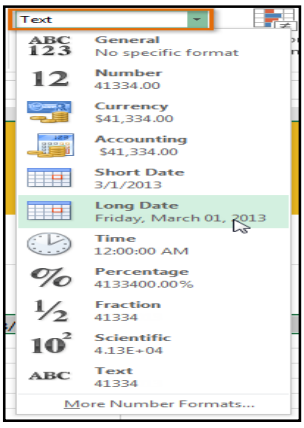
One of the most powerful tools in Excel is the ability to apply **specific formatting** for text and numbers. Instead of displaying all cell content in exactly the same way, you can use formatting to change the appearance of **dates**, **times**, **decimals**, **percentages (%)**, **currency ($),** and much more.

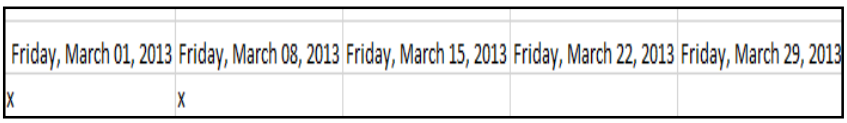
To apply number formatting:

In our example, we'll change the **number format** for several cells to modify the way **dates** are displayed.



1. Select the **cells(s)** you want to modify.
2. Click the **drop-down arrow** next to the **Number Format** command on the **Home** tab. The **Number Formatting** drop-down menu will appear.
3. Select the **desired formatting option**. In our example, we will change the formatting to **Long Date**.
4. The selected cells will change to the **new formatting** style. For some number formats, you can then use the **Increase Decimal** and **Decrease Decimal** commands (below the Number Format command) to change the number of decimal places that are displayed.





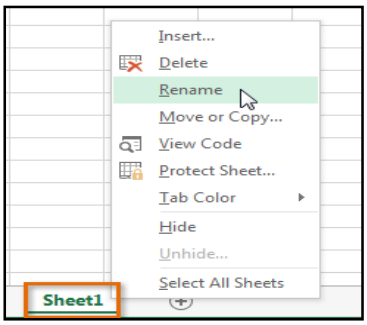
Chapter-7 Worksheet Basics

Introduction

Every workbook contains at least one **worksheet** by default. When working with a large amount of data, you can create **multiple worksheets** to help organize your workbook and make it easier to find content. You can also **group** worksheets to quickly add information to multiple worksheets at the same time.

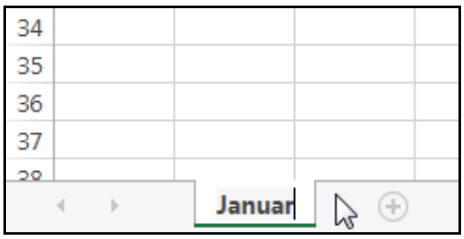
To rename a worksheet:

Whenever you create a new Excel workbook, it will contain **one worksheet** named **Sheet1**. You can rename a worksheet to better reflect its content. In our example, we will create a training log organized **by month**.

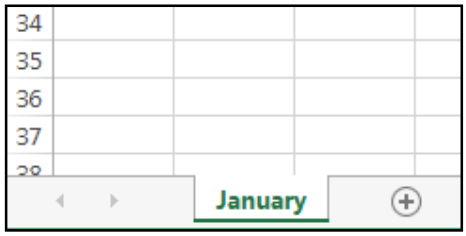


1. Right-click the **worksheet** you want to rename, then select **Rename** from the **worksheet** menu.

2. Type the **desired name** for the worksheet.



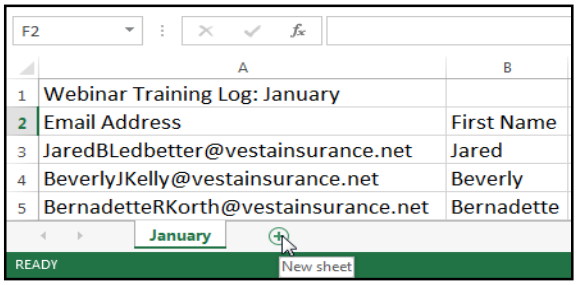
3. Click anywhere outside of the worksheet, or press **Enter** on your keyboard. The worksheet will be **renamed**.

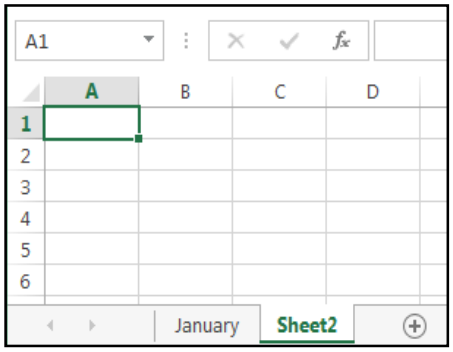


To insert a new worksheet:

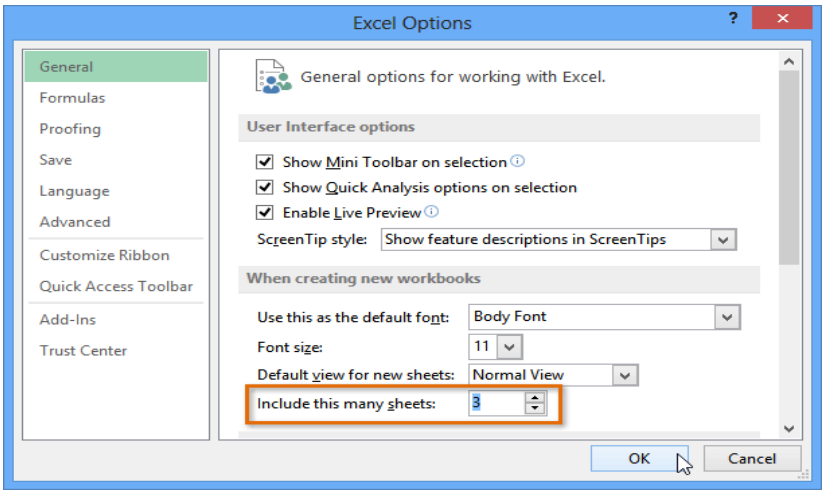
1. Locate and select the **New sheet** button.

2. A **new blank worksheet** will appear.





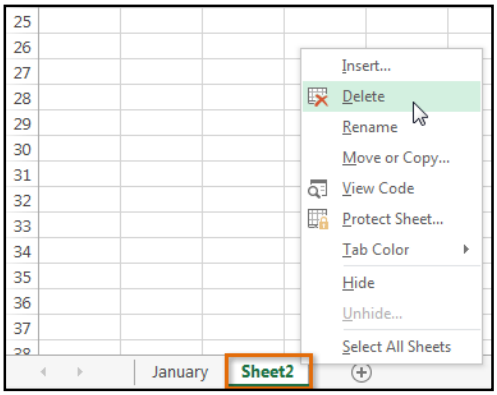
To change the **default number** of worksheets, navigate to **Backstage view**, click **Options**, then choose the desired number of worksheets to include in each new workbook.

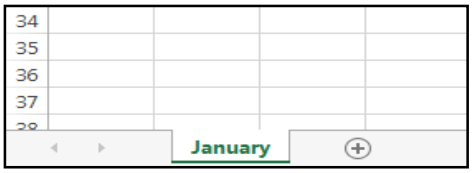


To delete a worksheet:

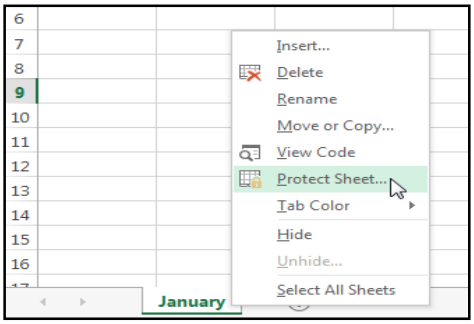
1. Right-click the **worksheet** you want to delete, then select **Delete** from the **worksheet** menu.

2. The worksheet will be **deleted** from your workbook.



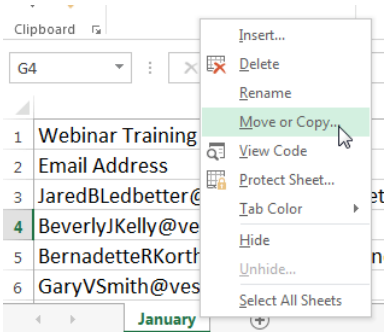


If you want to prevent specific worksheets from being edited or deleted, you can **protect them** by right-clicking the desired **worksheet** and then selecting **Protect sheet** from the **worksheet** menu.



To copy a worksheet:

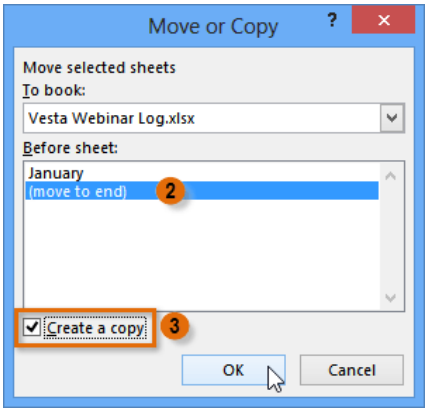
If you need to **duplicate** the content of one worksheet to another, Excel allows you to **copy** an existing worksheet.



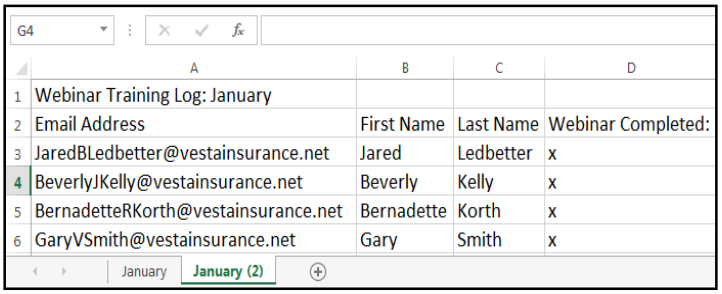
1. Right-click the worksheet you want to copy, then select **Move or Copy** from the **worksheet** menu.

2. The **Move or Copy** dialog box will appear. Choose where the sheet will appear in the **Before sheet:** field. In our example, we'll choose **(move to end)** to place the worksheet to the right of the existing worksheet.

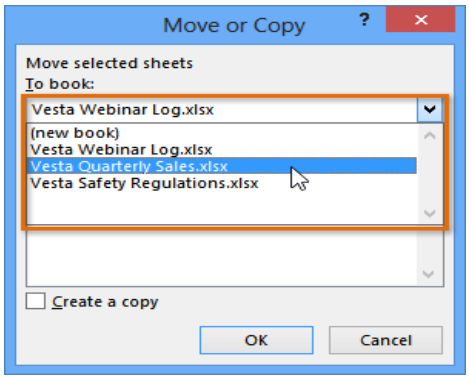
3. **Check the box** next to **Create a copy**, then click **OK**.



4. The worksheet will be **copied**. It will have the same title as the original worksheet, as well as a **version number**. In our example, we copied the **January** worksheet, so our new worksheet is named **January (2)**. All content from the January worksheet has also been copied to the January (2) worksheet.



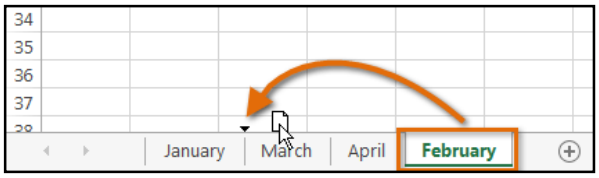
You can also copy a worksheet to an entirely different **workbook**. You can select any workbook that is currently open from the **To book:** drop-down menu.

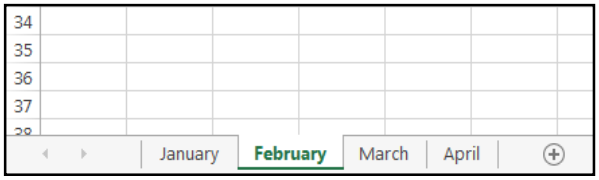


To move a worksheet:

Sometimes you may want to **move** a worksheet to rearrange your workbook.

1. Select the **worksheet** you want to move. The cursor will become a **small worksheet** icon .
2. Hold and drag the mouse until a **small black arrow** appears above the desired location.
3. Release the mouse. The worksheet will be **moved**.

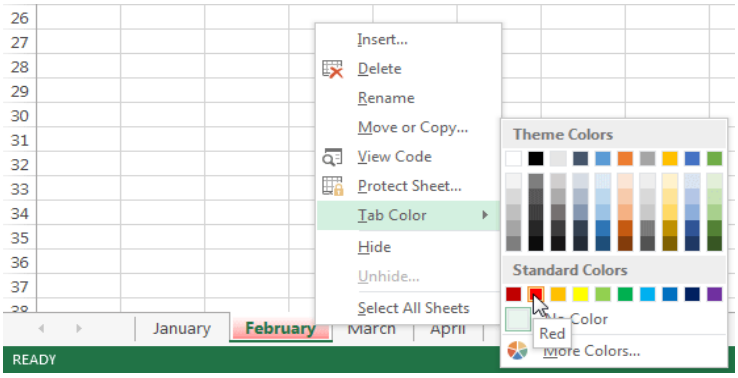


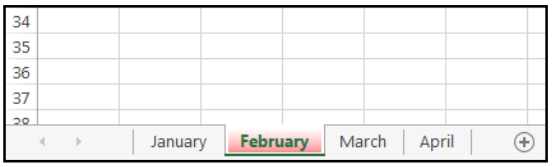


To change the worksheet tab color:

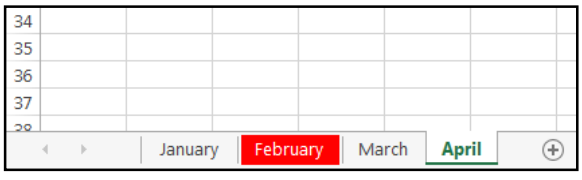
You can change a worksheet tab's **color** to help organize your worksheets and make your workbook easier to navigate.

1. Right-click the desired worksheet tab, and hover the mouse over **Tab Color**. The **Color** menu will appear.
2. Select the desired **color**. A **live preview** of the new worksheet tab color will appear as you hover the mouse over different options. In our example, we'll choose **Red**.
3. The worksheet tab color will be **changed**.





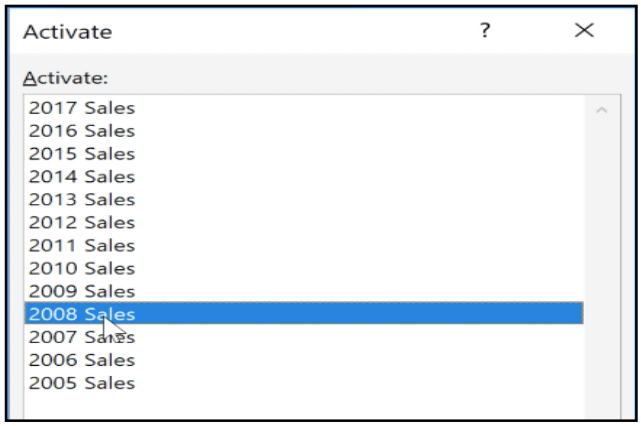
The worksheet tab color is considerably **less noticeable** when the worksheet is selected. Select another worksheet to see how the color will appear when the worksheet is not selected.



Switching between worksheets

If you want to view a different worksheet, you can simply **click the tab** to switch to that worksheet. However, with larger workbooks this can sometimes become tedious, as it may require scrolling through all of the tabs to find the one you want. Instead, you can simply **right-click** the scroll arrows in the lower-left corner, as shown below.

A dialog box will appear with a list of all of the sheets in your workbook. You can then **double-click** the sheet you want to jump to.

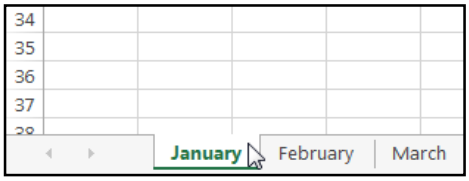


Grouping and ungrouping worksheets

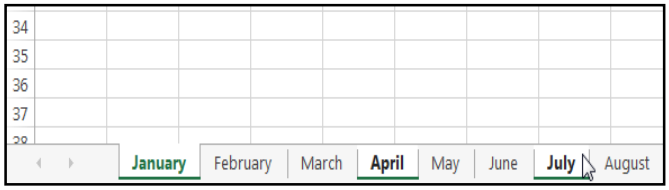
You can work with each worksheet **individually**, or you can work with multiple worksheets at the same time. Worksheets can be combined together into a **group**. Any changes made to one worksheet in a group will be made to **every worksheet** in the group.

To group worksheets:

In our example, employees need to receive training every three months, so we'll create a worksheet group for those employees. When we add the names of the employees to one worksheet, they'll be added to the other worksheets in the group as well.



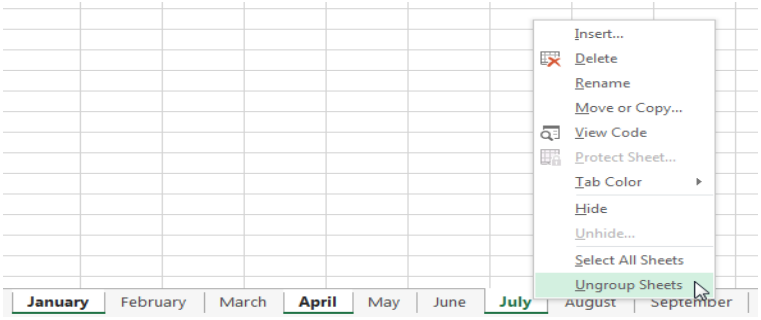
1. Select the **first worksheet** you want to include in the **worksheet group**.
2. Press and hold the **Ctrl** key on your keyboard.
3. Select the **next worksheet** you want in the group. Continue to select worksheets until all of the worksheets you want to group are selected.
4. Release the **Ctrl** key. The worksheets are now **grouped**.



While worksheets are grouped, you can navigate to any worksheet within the group. Any **changes** made to one worksheet will appear on **every worksheet** in the group. However, if you select a worksheet that is not in the group, all of your worksheets will become **ungrouped**.

To ungroup all worksheets:

1. Right-click a worksheet in the group, then select **Ungroup Sheets** from the **worksheet** menu.



2. The worksheets will be **ungrouped**. Alternatively, you can simply click any worksheet not included in the group to **ungroup** all worksheets.

Chapter-8 Page Layout

Introduction

Many of the commands you'll use to prepare your workbook for printing and PDF export can be found on the **Page Layout** tab. These commands let you control the way your content will appear on a printed page, including the **page orientation** and **margin size**. Other page layout options, such as **print titles** and **page breaks**, can help make your workbook easier to read.

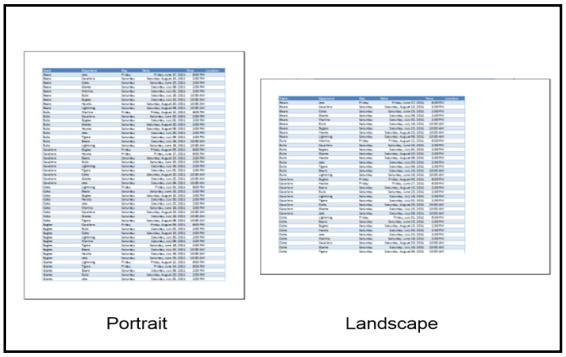
Page Layout view

Before you start modifying a workbook's page layout, you may want to view the workbook in **Page Layout view**, which can help you visualize your changes.

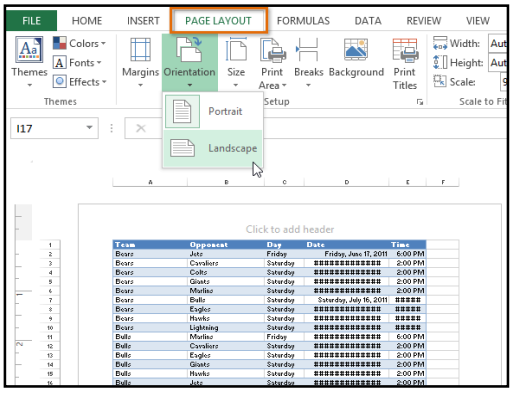
To access Page Layout view, locate and select the **Page Layout view** command in the bottom-right corner of your workbook.

Page orientation

Excel offers two page orientation options: **landscape** and **portrait**. **Landscape** orients the page **horizontally**, while **portrait** orients the page **vertically**. Portrait is especially helpful for worksheets with a lot of **rows**, while landscape is best for worksheets with a lot of **columns**. In the example below, portrait orientation works best because the worksheet includes more rows than columns.



To change page orientation:



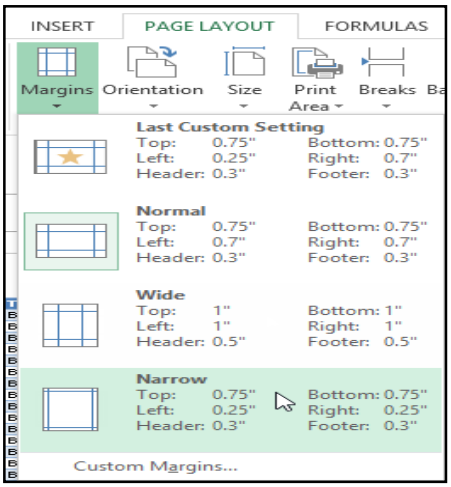
1. Click the **Page Layout** tab on the **Ribbon**.
2. Select the **Orientation** command, then choose either **Portrait** or **Landscape** from the drop-down menu.
3. The page orientation of the workbook will be changed.

To format page margins:

A **margin** is the space between your content and the edge of the page. By default, every workbook's margins are set to **Normal**, which is a one-inch space between the content and each edge of the page. Sometimes you may need to **adjust** the margins to make your data fit more comfortably on the page. Excel includes a variety of **predefined margin sizes**.

1. Click the **Page Layout** tab on the **Ribbon**, then select the **Margins** command.
2. The margins will be changed to the selected size.

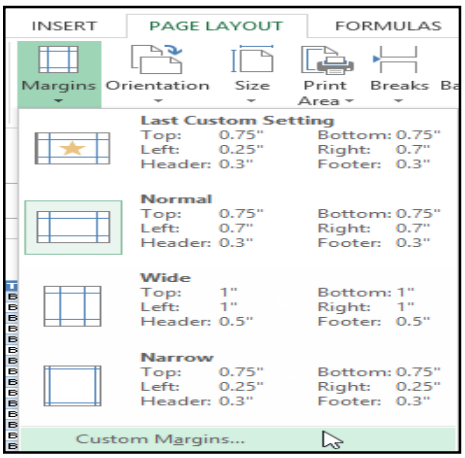
1. Select the **desired margin size** from the drop-down menu. In our example, we'll select **Narrow** to fit more of our content on the page.



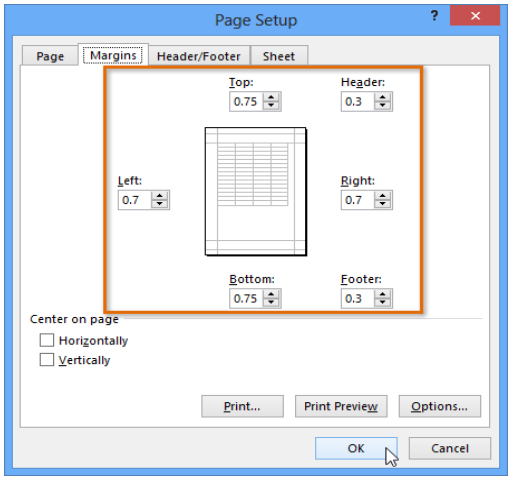
To use custom margins:

Excel also allows you to customize the size of your margins in the **Page Setup** dialog box.

1. From the **Page Layout** tab, click **Margins**. Select **Custom Margins...** from the drop-down menu.



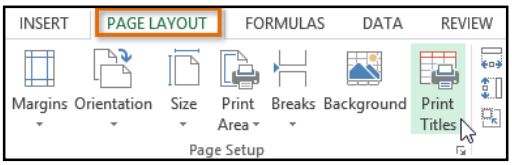
2. The **Page Setup** dialog box will appear.
3. Adjust the values for each margin, then click **OK**.



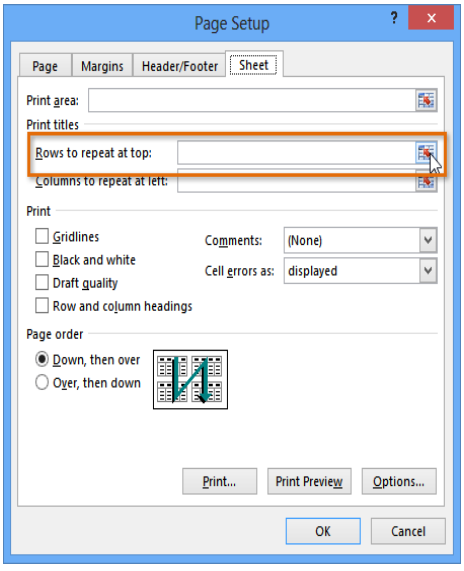
4. The margins of the workbook will be changed.

To include Print Titles:

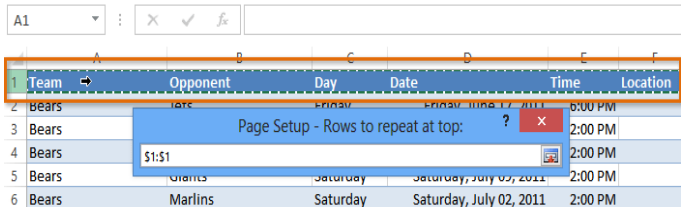
If your worksheet uses **title headings**, it's important to include these headings on each page of your printed worksheet. It would be difficult to read a printed workbook if the title headings appeared only on the first page. The **Print Titles** command allows you to select specific rows and columns to appear on each page.



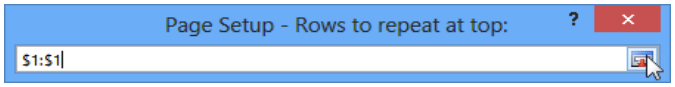
1. Click the **Page Layout** tab on the **Ribbon**, then select the **Print Titles** command.
2. The **Page Setup** dialog box will appear. From here, you can choose **rows** or **columns** to repeat on each page. In our example, we'll repeat a row.
3. Click the **Collapse Dialog** button next to the **Rows to repeat at top:** field.



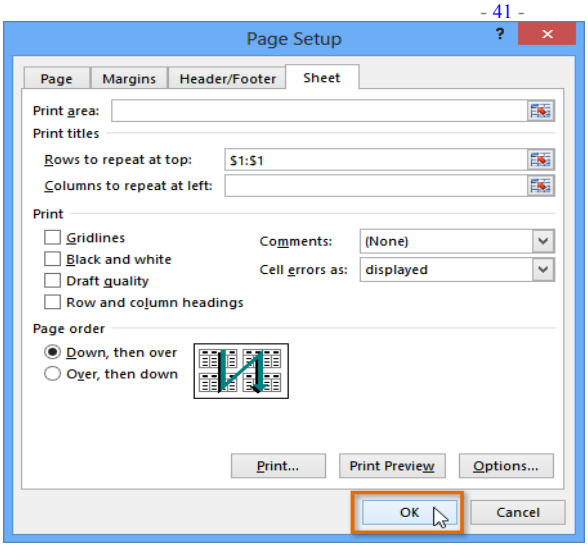
4. The cursor will become a small **selection arrow** ➡ and the **Page Setup** dialog box will be collapsed. Select the **row(s)** you want to repeat at the top of each printed page. In our example, we'll select row 1.



5. Row 1 will be added to the **Rows to repeat at top:** field. Click the **Collapse Dialog** button again.



6. The **Page Setup** dialog box will expand. Click **OK**. Row 1 will be printed at the top of every page.



To insert a page break:

If you need to print different parts of your workbook across separate pages, you can insert a **page break**. There are two types of page breaks: **vertical** and **horizontal**. Vertical page breaks separate columns, while horizontal page breaks separate rows. In our example, we'll insert a horizontal page break.

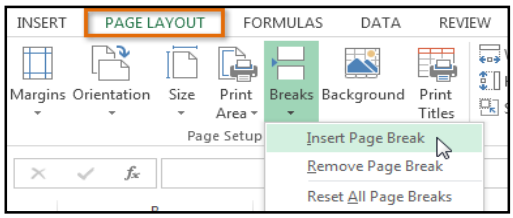
1. Locate and select the **Page Break view** command. The worksheet will appear in Page Break view.

2. Select the **row** below where you want the page break to appear. For example, if you want to insert a page break between rows 28 and 29, select row 29.

	A	B	C	D	E	F
19	Bulls	Lightning	Saturday	Saturday, June 18, 2011	10:00 AM	
20	Cavaliers	Eagles	Friday	Friday, August 05, 2011	6:00 PM	
21	Cavaliers	Hawks	Friday	Friday, June 17, 2011	6:00 PM	
22	Cavaliers	Bears	Saturday	Saturday, August 13, 2011	2:00 PM	
23	Cavaliers	Bulls	Saturday	Saturday, June 25, 2011	2:00 PM	
24	Cavaliers	Lightning	Saturday	Saturday, July 16, 2011	2:00 PM	
25	Cavaliers	Tigers	Saturday	Saturday, July 02, 2011	2:00 PM	
26	Cavaliers	Colts	Saturday	Saturday, August 20, 2011	10:00 AM	
27	Cavaliers	Giants	Saturday	Saturday, July 23, 2011	10:00 AM	
28	Cavaliers	Jets	Saturday	Saturday, July 09, 2011	10:00 AM	
29	Colts	Lightning	Friday	Friday, July 01, 2011	6:00 PM	
30	Colts	Bears	Saturday	Saturday, June 25, 2011	2:00 PM	
31	Colts	Eagles	Saturday	Saturday, August 13, 2011	2:00 PM	
32	Colts	Hawks	Saturday	Saturday, July 30, 2011	2:00 PM	
33	Colts	Jets	Saturday	Saturday, July 23, 2011	2:00 PM	
34	Colts	Marlins	Saturday	Saturday, June 18, 2011	2:00 PM	
35	Colts	Cavaliers	Saturday	Saturday, August 20, 2011	10:00 AM	

Page 1

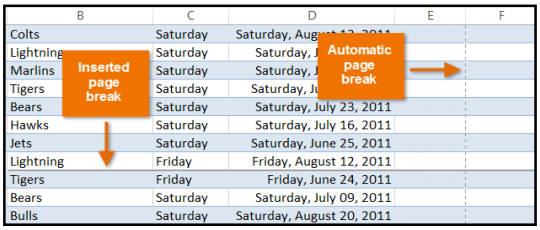
3. Click the **Page Layout** tab on the **Ribbon**, select the **Breaks** command, then click **Insert Page Break**.



4. The page break will be **inserted**, represented by a **dark blue line**.

	A	B	C	D	E	F
19	Bulls	Lightning	Saturday	Saturday, June 18, 2011	10:00 AM	
20	Cavaliers	Eagles	Friday	Friday, August 05, 2011	6:00 PM	
21	Cavaliers	Hawks	Friday	Friday, June 17, 2011	6:00 PM	
22	Cavaliers	Bears	Saturday	Saturday, August 13, 2011	2:00 PM	
23	Cavaliers	Bulls	Saturday	Saturday, June 25, 2011	2:00 PM	
24	Cavaliers	Lightning	Saturday	Saturday, July 16, 2011	2:00 PM	
25	Cavaliers	Tigers	Saturday	Saturday, July 02, 2011	2:00 PM	
26	Cavaliers	Colts	Saturday	Saturday, August 20, 2011	10:00 AM	
27	Cavaliers	Giants	Saturday	Saturday, July 23, 2011	10:00 AM	
28	Cavaliers	Jets	Saturday	Saturday, July 09, 2011	10:00 AM	
29	Colts	Lightning	Friday	Friday, July 01, 2011	6:00 PM	
30	Colts	Bears	Saturday	Saturday, June 25, 2011	2:00 PM	
31	Colts	Eagles	Saturday	Saturday, August 13, 2011	2:00 PM	
32	Colts	Hawks	Saturday	Saturday, July 30, 2011	2:00 PM	
33	Colts	Jets	Saturday	Saturday, July 23, 2011	2:00 PM	
34	Colts	Marlins	Saturday	Saturday, June 18, 2011	2:00 PM	
35	Colts	Cavaliers	Saturday	Saturday, August 20, 2011	10:00 AM	

When viewing your workbook in **Normal view**, inserted page breaks are represented by a **solid gray line**, while automatic page breaks are represented by a **dashed line**.

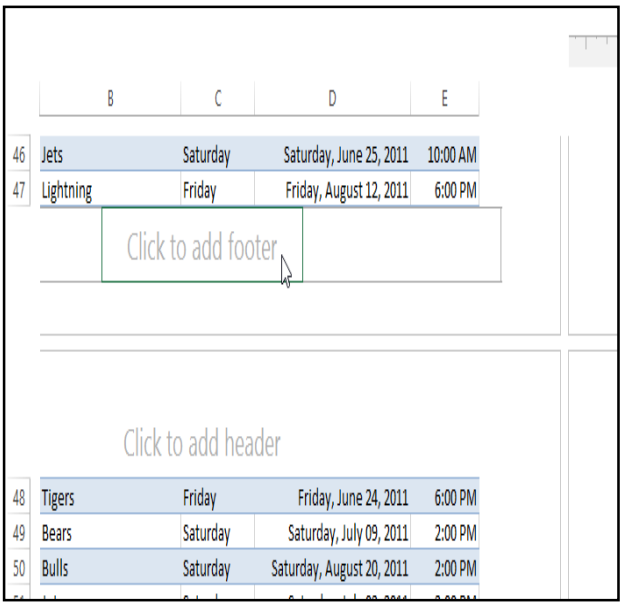


To insert headers and footers:

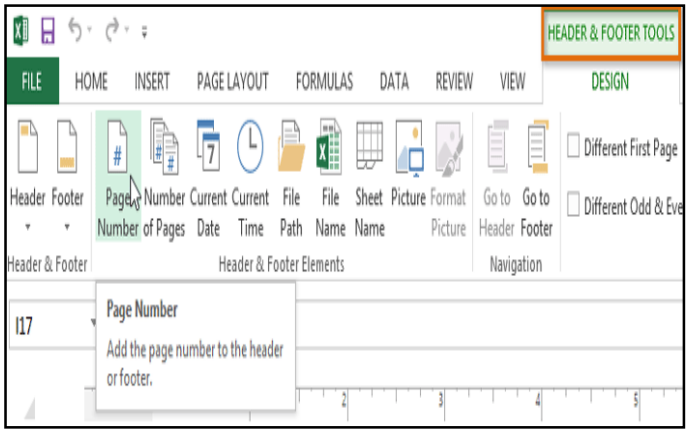
You can make your workbook easier to read and look more professional by including **headers and footers**. The **header** is a section of the workbook that appears in the **top margin**, while the **footer** appears in the **bottom margin**. Headers and footers generally contain information such as page number, date, and workbook name.

1. Locate and select the **Page Layout view** command at the bottom of the Excel window. The worksheet will appear in Page Layout view.

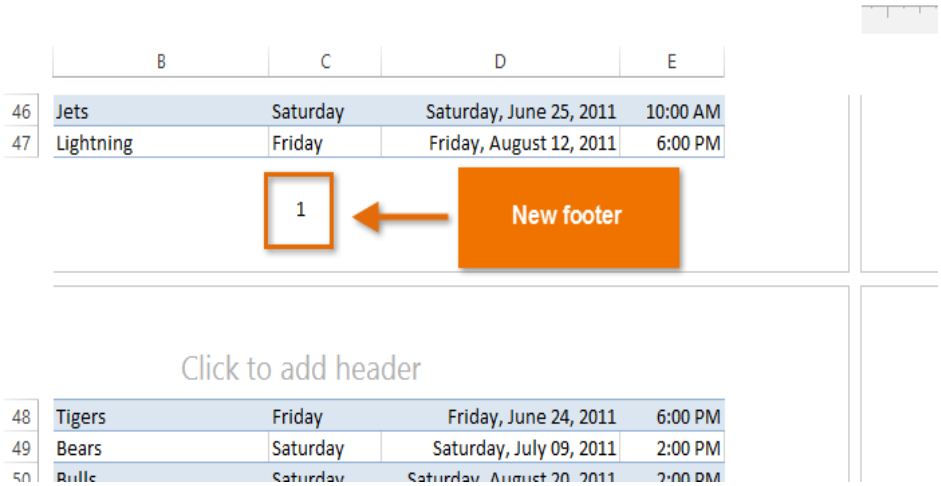
2. Select the **header** or **footer** you want to modify. In our example, we'll modify the **footer** at the bottom of the page.



3. The **Header & Footer Tools** tab will appear on the **Ribbon**. From here, you can access commands that will automatically include page numbers, dates, and workbook names. In our example, we'll add **page numbers**.



4. The footer will change to include page numbers automatically.



Excel uses the same tools as Microsoft Word to modify headers and footers. Check out our chapter on **Headers, Footers, and Page Numbers** from **Word 2013** e-book

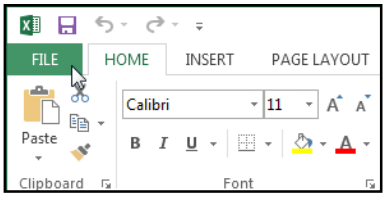
Chapter-9 Printing Workbooks

Introduction

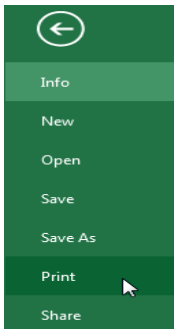
There may be times when you want to **print a workbook** to view and share your data **offline**. Once you've chosen your **page layout** settings, it's easy to preview and print a workbook from Excel using the **Print** pane.

To access the Print pane:

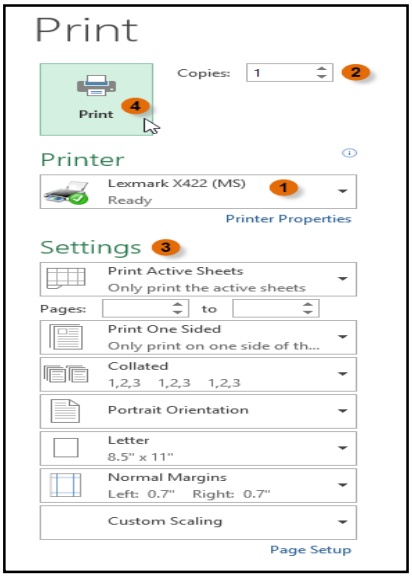
1. Select the **File** tab. **Backstage view** will appear.



2. Select **Print**. The **Print** pane will appear.



To print a workbook:



1. Navigate to the **Print** pane, then select the desired **printer**.
2. Enter the number of **copies** you wish to print.
3. Select any additional **settings** if needed (see above interactive).
4. Click **Print**.

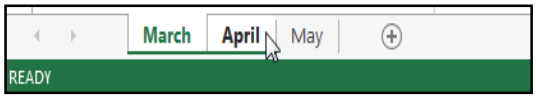
Choosing a print area

Before you print an Excel workbook, it's important to decide exactly what information you want to print. For example, if you have multiple worksheets in your workbook, you will need to decide if you want to print the **entire workbook** or only **active worksheets**. There may also be times when you want to print only a **selection** of content from your workbook.

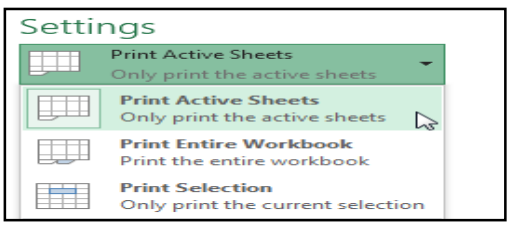
To print active sheets:

Worksheets are considered active when **selected**.

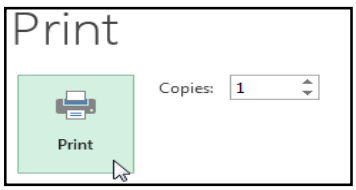
1. Select the **worksheet** you want to print. To print **multiple worksheets**, click the first worksheet, hold the **Ctrl** key on your keyboard, then click any other worksheets you want to select.



2. Navigate to the **Print** pane.
3. Select **Print Active Sheets** from the **Print Range** drop-down menu.

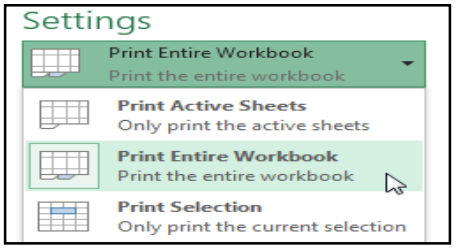


4. Click the **Print** button.

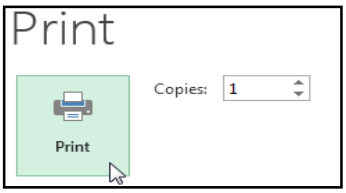


To print the entire workbook:

1. Navigate to the **Print** pane.
2. Select **Print Entire Workbook** from the **Print Range** drop-down menu.



3. Click the **Print** button.

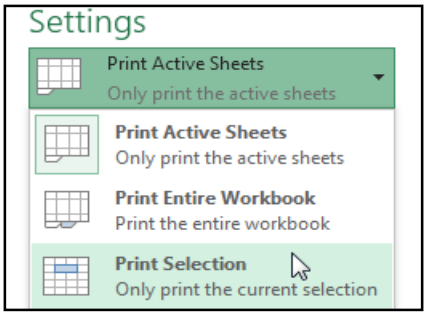


To print a selection:

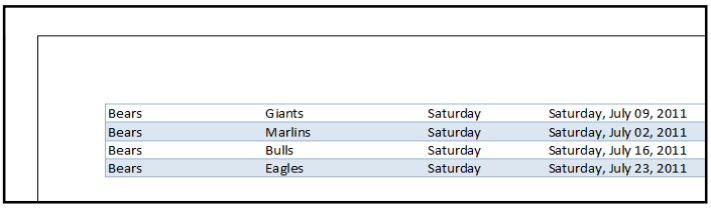
In our example, we'll print a selection of content related to upcoming softball games in July.

	Team	Opponent	Day	Date	Time
2	Bears	Jets	Friday	Monday, June 17, 2013	6:00 PM
3	Bears	Cavaliers	Saturday	Tuesday, August 13, 2013	2:00 PM
4	Bears	Colts	Saturday	Tuesday, June 25, 2013	2:00 PM
5	Bears	Giants	Saturday	Tuesday, July 09, 2013	2:00 PM
6	Bears	Marlins	Saturday	Tuesday, July 02, 2013	2:00 PM
7	Bears	Bulls	Saturday	Tuesday, July 16, 2013	10:00 AM
8	Bears	Eagles	Saturday	Tuesday, July 23, 2013	10:00 AM
9	Bears	Hawks	Saturday	Tuesday, August 20, 2013	10:00 AM
10	Bears	Lightning	Saturday	Tuesday, August 06, 2013	10:00 AM

1. Select the **cells** you want to print.
2. Navigate to the **Print** pane.
3. Select **Print Selection** from the **Print Range** drop-down menu.



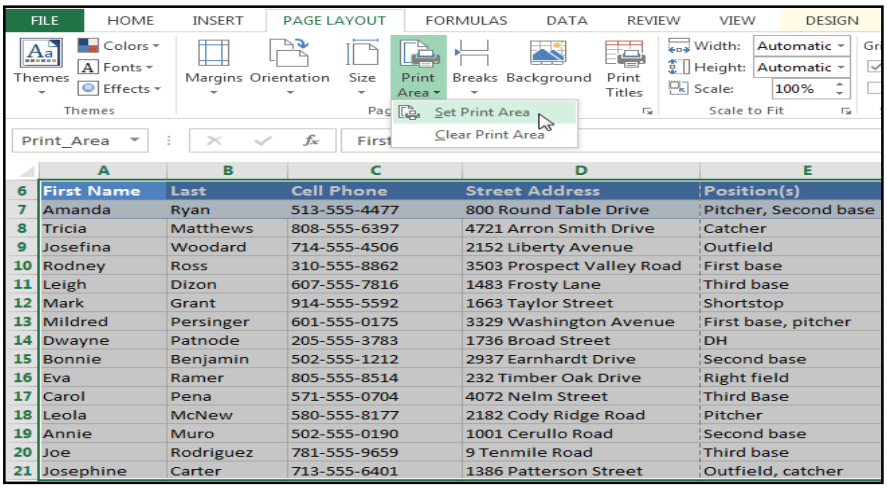
4. A **preview** of your selection will appear in the **Preview** pane.



Bears	Giants	Saturday	Saturday, July 09, 2011
Bears	Marlins	Saturday	Saturday, July 02, 2011
Bears	Bulls	Saturday	Saturday, July 16, 2011
Bears	Eagles	Saturday	Saturday, July 23, 2011

5. Click the **Print** button to print the selection.

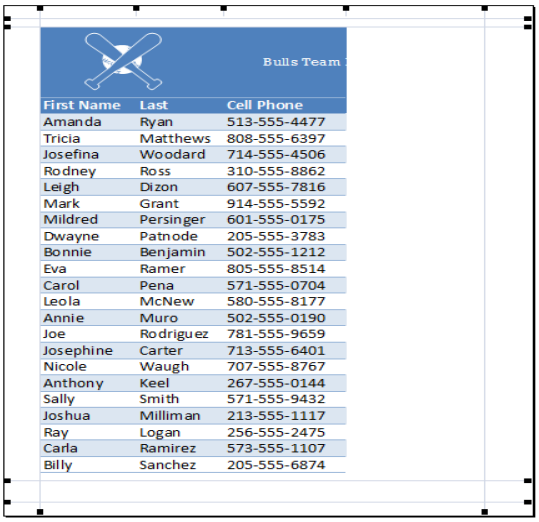
If you prefer, you can also set the **print area** in advance so you'll be able to visualize which cells will be printed as you work in Excel. Simply **select** the cells you want to print, click the **Page Layout** tab, select the **Print Area** command, then choose **Set Print Area**.



	A	B	C	D	E
6	First Name	Last	Cell Phone	Street Address	Position(s)
7	Amanda	Ryan	513-555-4477	800 Round Table Drive	Pitcher, Second base
8	Tricia	Matthews	808-555-6397	4721 Arron Smith Drive	Catcher
9	Josefina	Woodard	714-555-4506	2152 Liberty Avenue	Outfield
10	Rodney	Ross	310-555-8862	3503 Prospect Valley Road	First base
11	Leigh	Dizon	607-555-7816	1483 Frosty Lane	Third base
12	Mark	Grant	914-555-5592	1663 Taylor Street	Shortstop
13	Mildred	Persinger	601-555-0175	3329 Washington Avenue	First base, pitcher
14	Dwayne	Patnode	205-555-3783	1736 Broad Street	DH
15	Bonnie	Benjamin	502-555-1212	2937 Earnhardt Drive	Second base
16	Eva	Ramer	805-555-8514	232 Timber Oak Drive	Right field
17	Carol	Pena	571-555-0704	4072 Nelm Street	Third Base
18	Leola	McNew	580-555-8177	2182 Cody Ridge Road	Pitcher
19	Annie	Muro	502-555-0190	1001 Cerullo Road	Second base
20	Joe	Rodriguez	781-555-9659	9 Tenmile Road	Third base
21	Josephine	Carter	713-555-6401	1386 Patterson Street	Outfield, catcher

Fitting and scaling content

On occasion, you may need to make **small adjustments** from the Print pane to fit your workbook content neatly onto a printed page. The Print pane includes several tools to help fit and scale your content, such as **scaling** and **page margins**.

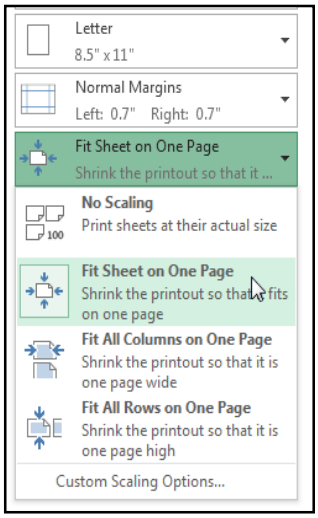


To fit content before printing:

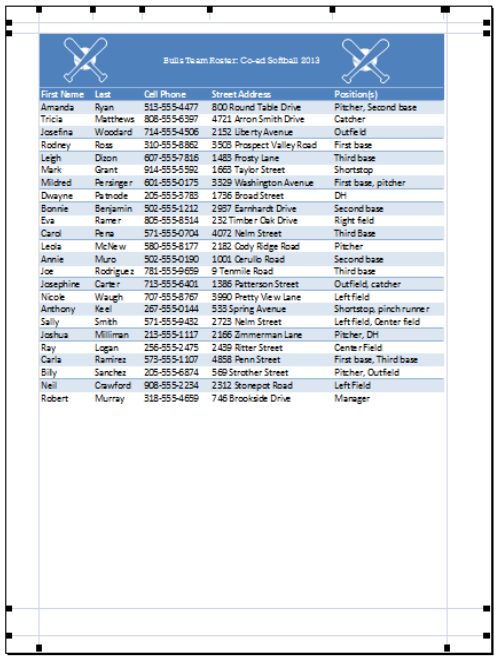
If some of your content is being cut off by the printer, you can use **scaling** to fit your workbook to the page automatically.

1. Navigate to the **Print** pane. In our example, we can see in the Preview pane that our content will be cut off when printed.

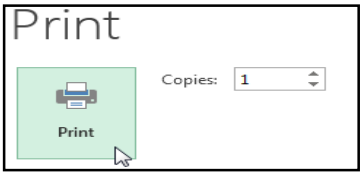
2. Select the desired option from the **Scaling** drop-down menu. In our example, we'll select **Fit Sheet on One Page**.



3. The worksheet will be **condensed** to fit onto a single page.



4. When you're satisfied with the scaling, click **Print**.

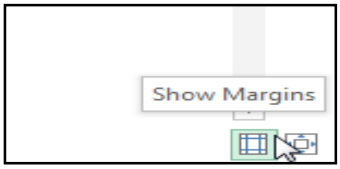


Keep in mind that more **difficult to read** as you may not want to use a worksheet with a lot of worksheets will become they are scaled down, so this option when printing information.

To modify margins in the Preview pane:

Sometimes you may only need to adjust a **single margin** to make your data fit more comfortably. You can modify individual page margins from the **Preview** pane.

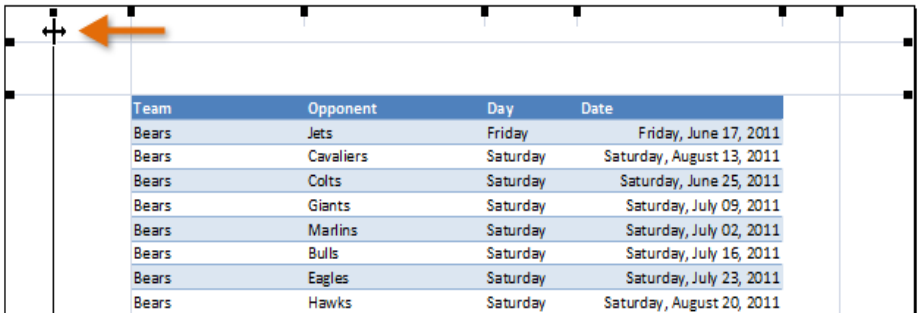
1. Navigate to the **Print** pane, then click the **Show Margins** button in the lower-right corner.



2. The **page margins** will appear in the **Preview** pane. Hover the mouse over one of the **margin markers** until the cursor becomes a **double arrow**. In our example, we'll modify the **left margin** to fit an additional column on the page.

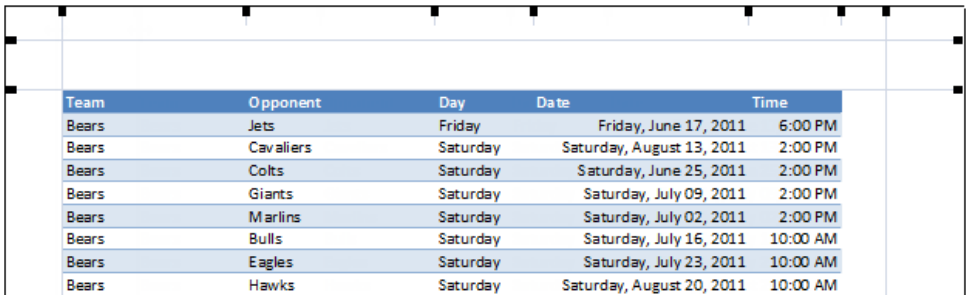
Team	Opponent	Day	Date
Bears	Jets	Friday	Friday, June 17, 2011
Bears	Cavaliers	Saturday	Saturday, August 13, 2011
Bears	Colts	Saturday	Saturday, June 25, 2011
Bears	Giants	Saturday	Saturday, July 09, 2011
Bears	Marlins	Saturday	Saturday, July 02, 2011
Bears	Bulls	Saturday	Saturday, July 16, 2011
Bears	Eagles	Saturday	Saturday, July 23, 2011
Bears	Hawks	Saturday	Saturday, August 20, 2011

3. Click, hold, and drag the mouse to **increase** or **decrease** the **margin width**.



Team	Opponent	Day	Date
Bears	Jets	Friday	Friday, June 17, 2011
Bears	Cavaliers	Saturday	Saturday, August 13, 2011
Bears	Colts	Saturday	Saturday, June 25, 2011
Bears	Giants	Saturday	Saturday, July 09, 2011
Bears	Marlins	Saturday	Saturday, July 02, 2011
Bears	Bulls	Saturday	Saturday, July 16, 2011
Bears	Eagles	Saturday	Saturday, July 23, 2011
Bears	Hawks	Saturday	Saturday, August 20, 2011

4. Release the mouse. The margin will be modified. In our example, we were able to fit an additional column on the page.



Team	Opponent	Day	Date	Time
Bears	Jets	Friday	Friday, June 17, 2011	6:00 PM
Bears	Cavaliers	Saturday	Saturday, August 13, 2011	2:00 PM
Bears	Colts	Saturday	Saturday, June 25, 2011	2:00 PM
Bears	Giants	Saturday	Saturday, July 09, 2011	2:00 PM
Bears	Marlins	Saturday	Saturday, July 02, 2011	2:00 PM
Bears	Bulls	Saturday	Saturday, July 16, 2011	10:00 AM
Bears	Eagles	Saturday	Saturday, July 23, 2011	10:00 AM
Bears	Hawks	Saturday	Saturday, August 20, 2011	10:00 AM

Chapter-10 Simple Formulas

Introduction

One of the most powerful features in Excel is the ability to **calculate** numerical information using **formulas**. Just like a calculator, Excel can add, subtract, multiply, and divide. In this lesson, we'll show you how to use **cell references** to create simple formulas.

Mathematical operators

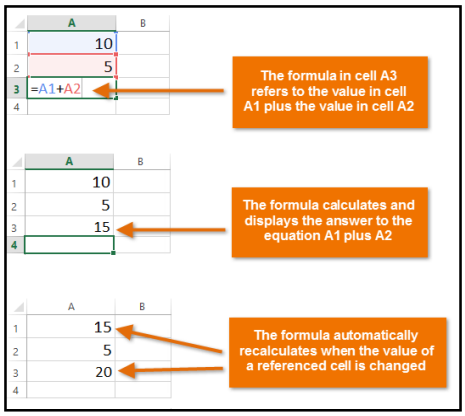
Excel uses standard operators for formulas, such as a **plus sign** for addition (**+**), a **minus sign** for subtraction (**-**), an **asterisk** for multiplication (*****), a **forward slash** for division (**/**), and a **caret** (**^**) for exponents.

Addition	+
Subtraction	-
Multiplication	*
Division	/
Exponents	^

All formulas in Excel must begin with an **equals sign** (**=**). This is because the cell contains, or is equal to, the formula and the value it calculates.

Understanding cell references

While you can create simple formulas in Excel manually (for example, **=2+2** or **=5*5**), most of the time you will use **cell addresses** to create a formula. This is known as making a **cell reference**. Using cell references will ensure that your formulas are always accurate because you can change the value of referenced cells without having to rewrite the formula.

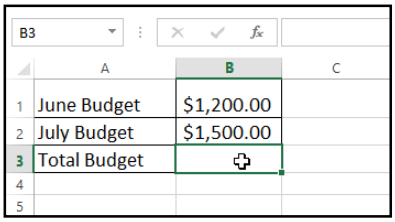


By combining a mathematical operator with cell references, you can create a variety of simple formulas in Excel. Formulas can also include a combination of cell references and numbers, as in the examples below:

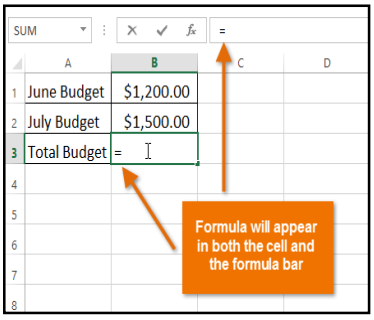
=A1+A2	Adds cells A1 and A2
=C4-3	Subtracts 3 from cell C4
=E7/J4	Divides cell E7 by J4
=N10*1.05	Multiplies cell N10 by 1.05
=R5^2	Finds the square of cell R5

To create a formula:

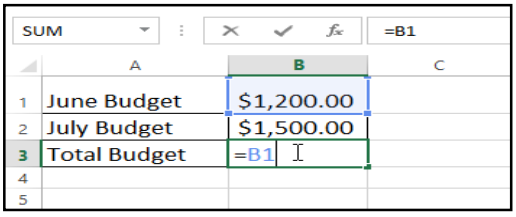
In our example below, we'll use a simple formula and cell references to calculate a budget.



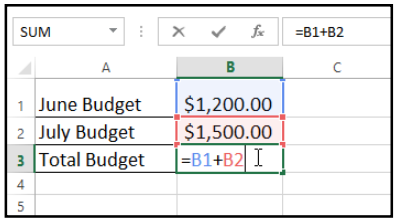
1. Select the **cell** that will contain the formula. In our example, we'll select cell **B3**.
2. Type the **equals sign (=)**. Notice how it appears in both the **cell** and the **formula bar**.



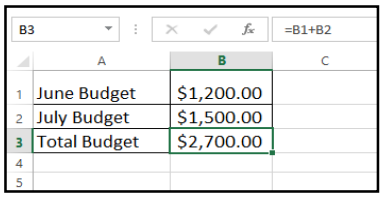
3. Type the **cell address** of the cell you want to reference first in the formula: cell **B1** in our example. A **blue border** will appear around the referenced cell.



4. Type the **mathematical operator** you want to use. In our example, we'll type the **addition sign (+)**.
5. Type the **cell address** of the cell you want to reference second in the formula: cell **B2** in our example. A **red border** will appear around the referenced cell.



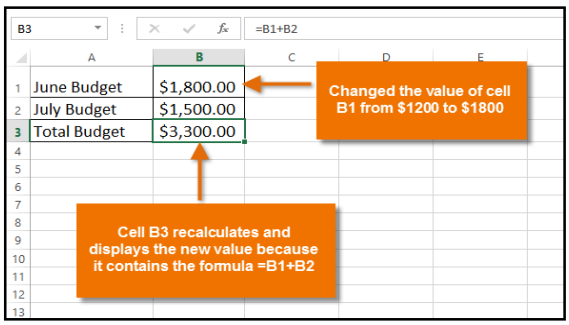
6. Press **Enter** on your keyboard. The formula will be **calculated**, and the **value** will be displayed in the cell.



If the result of a formula is too large to be displayed in a cell, it may appear as **pound signs** (#######) instead of a value. This means the column is not wide enough to display the cell content. Simply **increase the column width** to show the cell content.

Modifying values with cell references

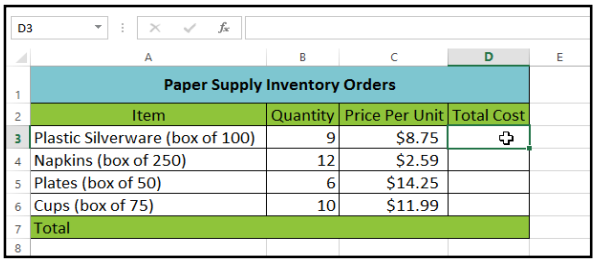
The true advantage of cell references is that they allow you to **update data** in your worksheet without having to rewrite formulas. In the example below, we've modified the value of cell B1 from $1,200 to $1,800. The formula in B3 will automatically recalculate and display the new value in cell B3.



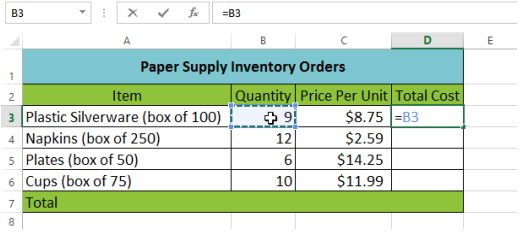
Excel **will not always tell you** if your formula contains an error, so it's up to you to check all of your formulas.

To create a formula using the point-and-click method:

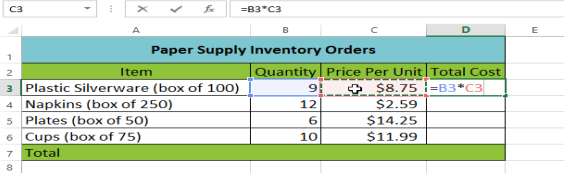
Rather than typing cell addresses manually, you can **point and click** on the cells you want to include in your formula. This method can save a lot of time and effort when creating formulas. In our example below, we'll create a formula to calculate the cost of ordering several boxes of plastic silverware.



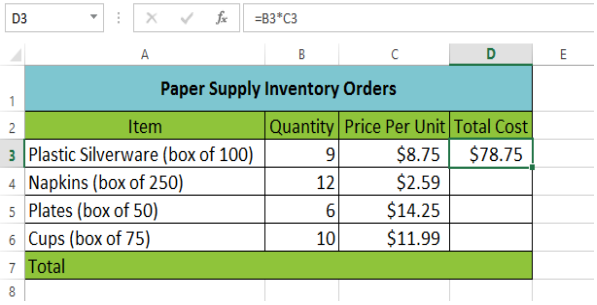
1. Select the **cell** that will contain the formula. In our example, we'll select cell **D3**.
2. Type the **equals sign (=)**.
3. Select the **cell** you want to reference first in the formula: cell **B3** in our example. The **cell address** will appear in the formula, and a **dashed blue line** will appear around the referenced cell.



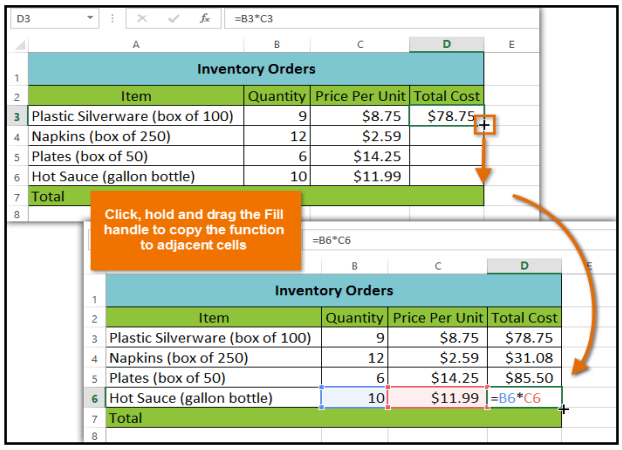
4. Type the **mathematical operator** you want to use. In our example, we'll type the **multiplication sign (*)**.
5. Select the **cell** you want to reference second in the formula: cell **C3** in our example. The **cell address** will appear in the formula, and a **dashed red line** will appear around the referenced cell.



6. Press **Enter** on your keyboard. The formula will be **calculated**, and the **value** will be displayed in the cell.



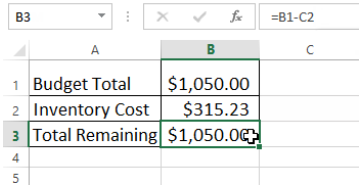
Formulas can also be **copied** to adjacent cells with the **fill handle**, which can save a lot of time and effort if you need to perform the **same calculation** multiple times in a worksheet.



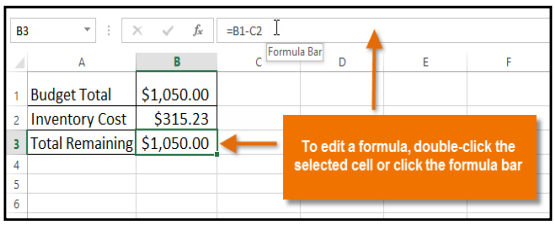
To edit a formula:

Sometimes you may want to modify an existing formula. In the example below, we've entered an incorrect cell address in our formula, so we'll need to correct it.

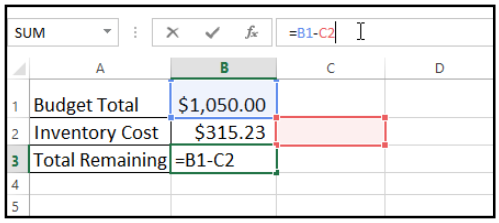
1. Select the **cell** containing the formula you want to edit.
In our example, we'll select cell **B3**.



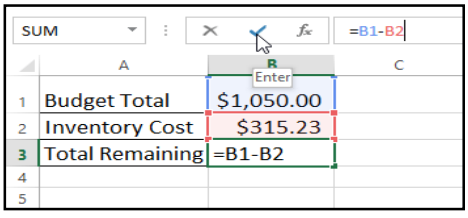
2. Click the **formula bar** to edit the formula. You can also **double-click** the cell to view and edit the formula directly within the cell.



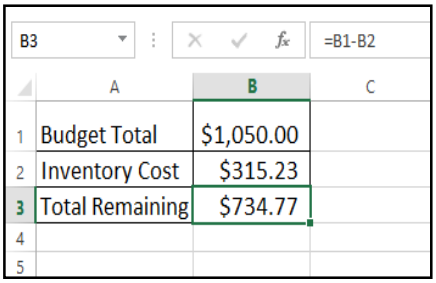
3. A **border** will appear around any referenced cells. In our example, we'll change the second part of the formula to reference cell **B2** instead of cell **C2**.



4. When you're finished, press **Enter** on your keyboard or click the **checkmark** in the formula bar.



5. The formula will be **updated**, and the **new value** will be displayed in the cell.



If you change your mind, you can press the **Esc** key on your keyboard to avoid accidentally making changes to your formula.

To show all of the formulas in a spreadsheet, you can hold the **Ctrl** key and press ` (grave accent). The grave accent key is usually located in the top-left corner of the keyboard. You can press **Ctrl+`** again to switch back to the normal view.

Chapter-11 Complex Formulas

Introduction

A simple formula is a mathematical expression with one operator, such as **7+9**. A **complex formula** has more than one mathematical operator, such as **5+2*8**. When there is more than one operation in a formula, the **order of operations** tells Excel which operation to calculate first. In order to use Excel to calculate complex formulas, you will need to understand the order of operations.

The order of operations

Excel calculates formulas based on the following **order of operations**:

1. Operations enclosed in **parentheses**
2. **Exponential** calculations (3^2, for example)
3. **Multiplication** and **division**, whichever comes first
4. **Addition** and **subtraction**, whichever comes first

A mnemonic that can help you remember the order is **PEMDAS**, or **P**lease **E**xcuse **M**y **D**ear **A**unt **S**ally.

To learn more about how the order of operations is used to calculate formulas in Excel see image below-

Using the Order of Operations	
P	10+(6-3)/2^2*4-1
E	10+3/2^2*4-1
M	10+3/4*4-1
D	10+0.75*4-1
A	10+3-1
S	13-1 =12

Now we have our answer: 12. This is the exact same result you would get if you entered the formula into Excel.

Creating complex formulas

In the example below, we will demonstrate how Excel solves a complex formula using the order of operations. Here, we want to calculate the cost of **sales tax** for a catering invoice. To do this, we'll write our formula as **=(D2+D3)*0.075** in cell **D4**. This formula will add the prices of our items together and then multiply that value by the 7.5% tax rate (which is written as 0.075) to calculate the cost of sales tax.

=(D2+D3)*0.075

	A	B	C	D	E
1	Menu Item	Price	Quantity	Total	
2	Empanadas: Beef Picadillo	$2.99	15	$44.85	
3	Empanadas: Chipotle Shrimp	$3.99	10	$39.90	
4			Tax	=(D2+D3)*0.075	
5			Total		
6					

Excel follows the order of operations and first adds the values inside the parentheses: **(44.85+39.90) = $84.75**. It then multiplies that value by the tax rate: **$84.75*0.075**. The result will show that the sales tax is **$6.36**.

D4 =(D2+D3)*0.075

	A	B	C	D	E
1	Menu Item	Price	Quantity	Total	
2	Empanadas: Beef Picadillo	$2.99	15	$44.85	
3	Empanadas: Chipotle Shrimp	$3.99	10	$39.90	
4			Tax	$6.36	
5			Total		
6					

It is especially important to enter complex formulas with the correct order of operations. Otherwise, Excel will not calculate the results accurately. In our example, if the **parentheses** are not included, the multiplication is calculated first and the result is incorrect. Parentheses are the best way to define which calculations will be performed first in Excel.

=(D2+D3)*0.075

Without parentheses, multiplication is performed before addition, leading to an incorrect result

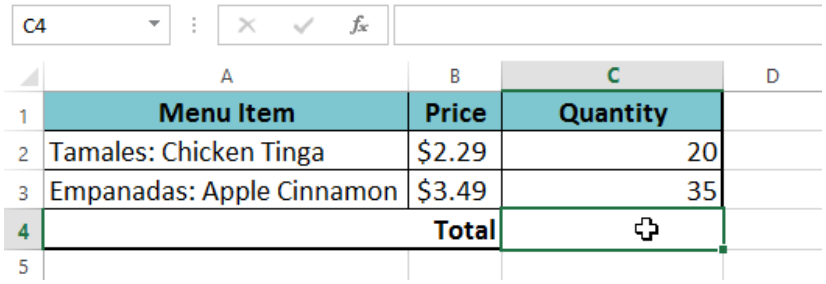
	A	B	C	D
1	Menu Item	Price		
2	Empanadas: Beef Picadillo	$2.99		
3	Empanadas: Chipotle Shrimp	$3.99	10	$39.90
4			Tax	= D2+D3 *0.075
5			Total	
6				

Tax	$47.84
Total	

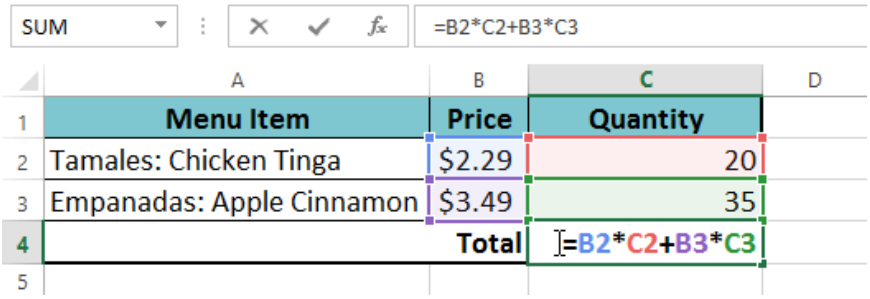
To create a complex formula using the order of operations:

In our example below, we will use **cell references** along with **numerical values** to create a complex formula that will calculate the **total cost** for a catering invoice. The formula will calculate the cost for each menu item and then add those values together.

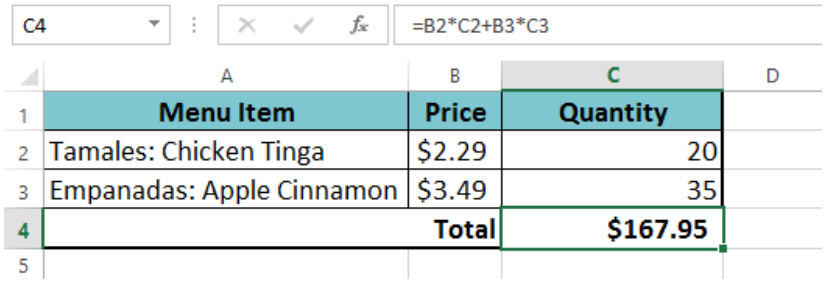
1. Select the **cell** that will contain the formula. In our example, we'll select cell **C4**.



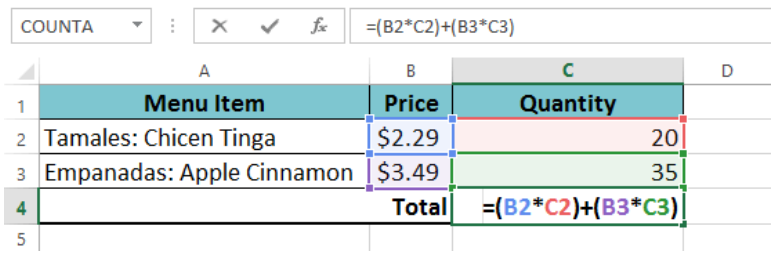
2. Enter your **formula**. In our example, we'll type **=B2*C2+B3*C3**. This formula will follow the order of operations, first performing the multiplication: **2.29*20 = 45.80** and **3.49*35 = 122.15**. It then will add those values together to calculate the total: **45.80+122.15**.



3. Double-check your formula for accuracy, then press **Enter** on your keyboard. The formula will **calculate** and display the **result**. In our example, the result shows that the total cost for the order is **$167.95**.



You can add **parentheses** to any equation to make it easier to read. While it won't change the result of the formula in this example, we could enclose the multiplication operations within parentheses to clarify that they will be calculated before the addition.



Chapter-12 Relative and Absolute Cell References

Introduction

There are two types of cell references: **relative** and **absolute**. Relative and absolute references behave differently when copied and filled to other cells. Relative references **change** when a formula is copied to another cell. Absolute references, on the other hand, remain **constant**, no matter where they are copied.

Relative references

By default, all cell references are **relative references**. When copied across multiple cells, they change based on the relative position of rows and columns. For example, if you copy the formula **=A1+B1** from row 1 to row 2, the formula will become **=A2+B2.** Relative references are especially convenient whenever you need to **repeat** the same calculation across multiple rows or columns.

To create and copy a formula using relative references:

In the following example, we want to create a formula that will multiply each item's **price** by the **quantity**. Instead of creating a new formula for each row, we can create a single formula in cell **D2** and then copy it to the other rows. We'll use relative references so the formula correctly calculates the total for each item.

	A	B	C	D
1	Menu Item	Price	Quantity	Total
2	Empanadas: Beef Picadillo	$2.99	15	
3	Empanadas: Chipotle Shrimp	$3.99	10	
4	Empanadas: Black Bean & Plantain	$2.49	20	
5	Tamales: Chicken Tinga	$2.29	20	
6	Tamales: Vegetable	$2.29	30	
7	Arepas: Carnitas	$2.89	10	
8	Arepas: Queso Blanco	$2.49	20	
9	Empanadas: Apple Cinnamon	$3.19	40	
10	Beverages: Horchata	$1.89	25	
11	Beverages: Lemonade	$1.89	35	
12	Beverages: Tamarindo	$1.89	10	
13			Total	

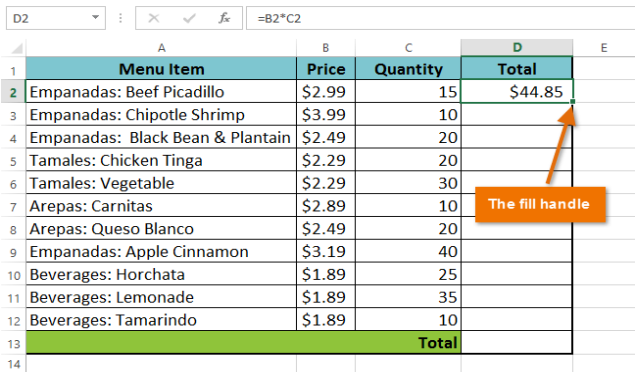
1. Select the **cell** that will contain the formula. In our example, we'll select cell **D2**.

2. Enter the **formula** to calculate the desired value. In our example, we'll type **=B2*C2**.

	A	B	C	D
1	Menu Item	Price	Quantity	Total
2	Empanadas: Beef Picadillo	$2.99	15	=B2*C2
3	Empanadas: Chipotle Shrimp	$3.99	10	
4	Empanadas: Black Bean & Plantain	$2.49	20	
5	Tamales: Chicken Tinga	$2.29	20	
6	Tamales: Vegetable	$2.29	30	
7	Arepas: Carnitas	$2.89	10	
8	Arepas: Queso Blanco	$2.49	20	
9	Empanadas: Apple Cinnamon	$3.19	40	
10	Beverages: Horchata	$1.89	25	
11	Beverages: Lemonade	$1.89	35	
12	Beverages: Tamarindo	$1.89	10	
13			Total	

3. Press **Enter** on your keyboard. The formula will be **calculated**, and the result will be displayed in the cell.

4. Locate the **fill handle** in the bottom-right corner of the desired cell. In our example, we'll locate the fill handle for cell **D2**.

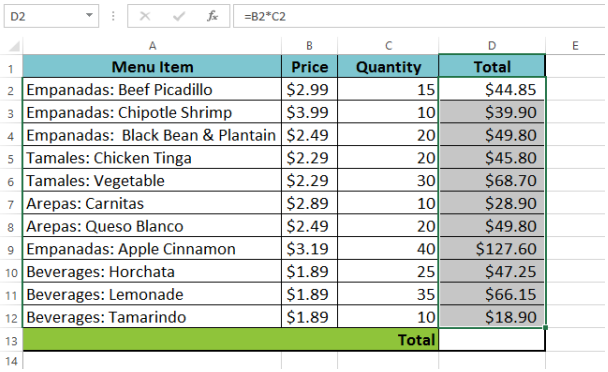


	A	B	C	D
1	Menu Item	Price	Quantity	Total
2	Empanadas: Beef Picadillo	$2.99	15	$44.85
3	Empanadas: Chipotle Shrimp	$3.99	10	
4	Empanadas: Black Bean & Plantain	$2.49	20	
5	Tamales: Chicken Tinga	$2.29	20	
6	Tamales: Vegetable	$2.29	30	
7	Arepas: Carnitas	$2.89	10	
8	Arepas: Queso Blanco	$2.49	20	
9	Empanadas: Apple Cinnamon	$3.19	40	
10	Beverages: Horchata	$1.89	25	
11	Beverages: Lemonade	$1.89	35	
12	Beverages: Tamarindo	$1.89	10	
13			Total	

5. Click, hold, and drag the **fill handle** over the cells you want to fill. In our example, we'll select cells **D3:D12**.

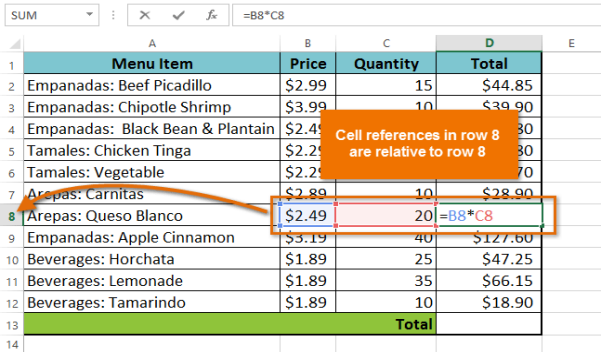
	A	B	C	D
1	Menu Item	Price	Quantity	Total
2	Empanadas: Beef Picadillo	$2.99	15	$44.85
3	Empanadas: Chipotle Shrimp	$3.99	10	
4	Empanadas: Black Bean & Plantain	$2.49	20	
5	Tamales: Chicken Tinga	$2.29	20	
6	Tamales: Vegetable	$2.29	30	
7	Arepas: Carnitas	$2.89	10	
8	Arepas: Queso Blanco	$2.49	20	
9	Empanadas: Apple Cinnamon	$3.19	40	
10	Beverages: Horchata	$1.89	25	
11	Beverages: Lemonade	$1.89	35	
12	Beverages: Tamarindo	$1.89	10	
13			Total	

6. Release the mouse. The formula will be **copied** to the selected cells with **relative references**, and the values will be calculated in each cell.



	A	B	C	D	E
1	Menu Item	Price	Quantity	Total	
2	Empanadas: Beef Picadillo	$2.99	15	$44.85	
3	Empanadas: Chipotle Shrimp	$3.99	10	$39.90	
4	Empanadas: Black Bean & Plantain	$2.49	20	$49.80	
5	Tamales: Chicken Tinga	$2.29	20	$45.80	
6	Tamales: Vegetable	$2.29	30	$68.70	
7	Arepas: Carnitas	$2.89	10	$28.90	
8	Arepas: Queso Blanco	$2.49	20	$49.80	
9	Empanadas: Apple Cinnamon	$3.19	40	$127.60	
10	Beverages: Horchata	$1.89	25	$47.25	
11	Beverages: Lemonade	$1.89	35	$66.15	
12	Beverages: Tamarindo	$1.89	10	$18.90	
13			Total		
14					

You can double-click the **filled cells** to check their formulas for accuracy. The relative cell references should be different for each cell, depending on their rows.



	A	B	C	D	E
1	Menu Item	Price	Quantity	Total	
2	Empanadas: Beef Picadillo	$2.99	15	$44.85	
3	Empanadas: Chipotle Shrimp	$3.99	10	$39.90	
4	Empanadas: Black Bean & Plantain	$2.49	20	$49.80	
5	Tamales: Chicken Tinga	$2.29	20	$45.80	
6	Tamales: Vegetable	$2.29	30	$68.70	
7	Arepas: Carnitas	$2.89	10	$28.90	
8	Arepas: Queso Blanco	$2.49	20	=B8*C8	
9	Empanadas: Apple Cinnamon	$3.19	40	$127.60	
10	Beverages: Horchata	$1.89	25	$47.25	
11	Beverages: Lemonade	$1.89	35	$66.15	
12	Beverages: Tamarindo	$1.89	10	$18.90	
13			Total		
14					

Absolute references

There may be times when you do not want a cell reference to change when filling cells. Unlike relative references, **absolute references** do not change when copied or filled. You can use an absolute reference to keep a row and/or column **constant**.

An absolute reference is designated in a formula by the addition of a **dollar sign ($)**. It can precede the column reference, the row reference, or both.

A2	**The column and the row do not change when copied**
A$2	**The row does not change when copied**
$A2	**The column does not change when copied**

You will generally use the **A2** format when creating formulas that contain absolute references. The other two formats are used much less frequently.

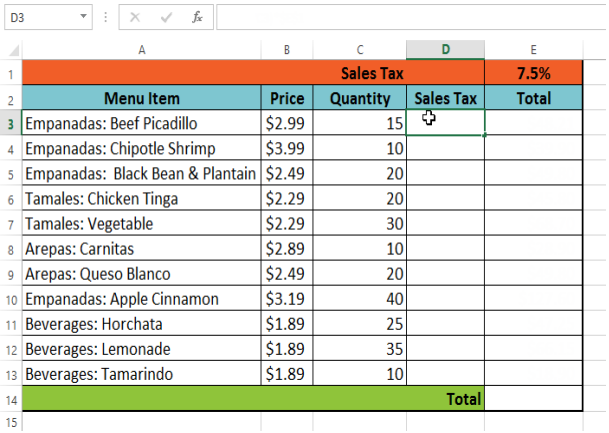
When writing a formula, you can press the **F4** key on your keyboard to switch between relative and absolute cell references. This is an easy way to quickly insert an absolute reference.

To create and copy a formula using absolute references:

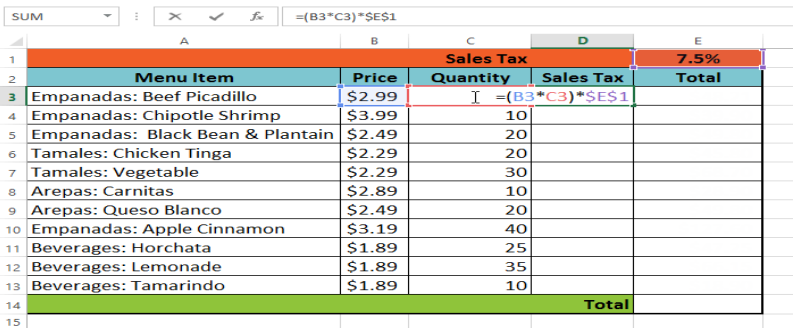
In our example, we'll use the 7.5% sales tax rate in cell **E1** to calculate the sales tax for all items in **column D**. We'll need to use the absolute cell reference **E1** in our formula. Because each formula is using the same tax rate, we want that reference to remain constant when the formula is copied and filled to other cells in column D.

1. Select the **cell** that will contain the formula. In our example, we'll select cell **D3**.

2. Enter the **formula** to calculate the desired value. In our example, we'll type **=(B3*C3)*E1**.



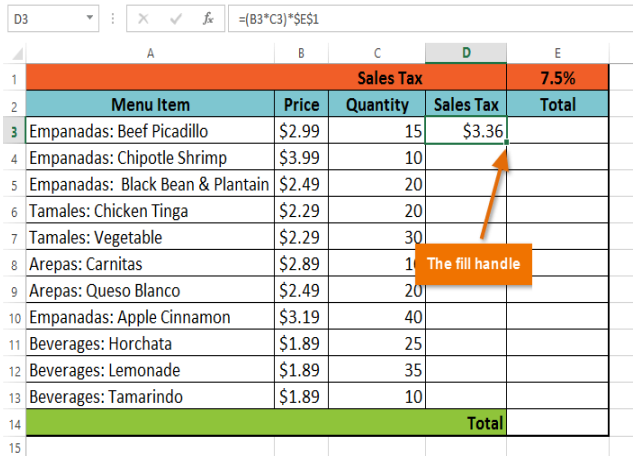
	A	B	C	D	E
1			Sales Tax		7.5%
2	Menu Item	Price	Quantity	Sales Tax	Total
3	Empanadas: Beef Picadillo	$2.99	15		
4	Empanadas: Chipotle Shrimp	$3.99	10		
5	Empanadas: Black Bean & Plantain	$2.49	20		
6	Tamales: Chicken Tinga	$2.29	20		
7	Tamales: Vegetable	$2.29	30		
8	Arepas: Carnitas	$2.89	10		
9	Arepas: Queso Blanco	$2.49	20		
10	Empanadas: Apple Cinnamon	$3.19	40		
11	Beverages: Horchata	$1.89	25		
12	Beverages: Lemonade	$1.89	35		
13	Beverages: Tamarindo	$1.89	10		
14				Total	
15					



	A	B	C	D	E
1			Sales Tax		7.5%
2	Menu Item	Price	Quantity	Sales Tax	Total
3	Empanadas: Beef Picadillo	$2.99	=(B3*C3)*E1		
4	Empanadas: Chipotle Shrimp	$3.99	10		
5	Empanadas: Black Bean & Plantain	$2.49	20		
6	Tamales: Chicken Tinga	$2.29	20		
7	Tamales: Vegetable	$2.29	30		
8	Arepas: Carnitas	$2.89	10		
9	Arepas: Queso Blanco	$2.49	20		
10	Empanadas: Apple Cinnamon	$3.19	40		
11	Beverages: Horchata	$1.89	25		
12	Beverages: Lemonade	$1.89	35		
13	Beverages: Tamarindo	$1.89	10		
14				Total	
15					

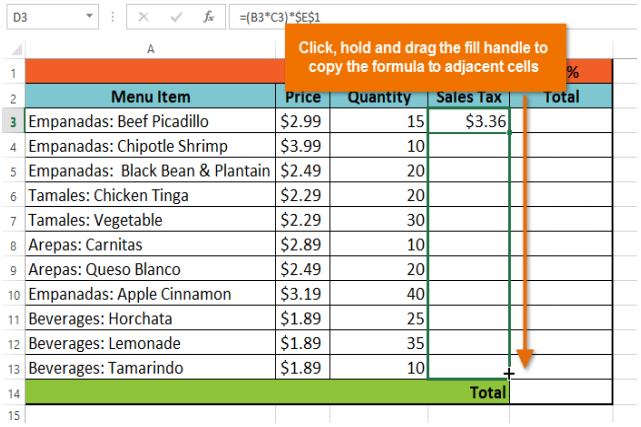
3. Press **Enter** on your keyboard. The formula will calculate, and the result will display in the cell.

4. Locate the **fill handle** in the bottom-right corner of the desired cell. In our example, we'll locate the fill handle for cell **D3**.



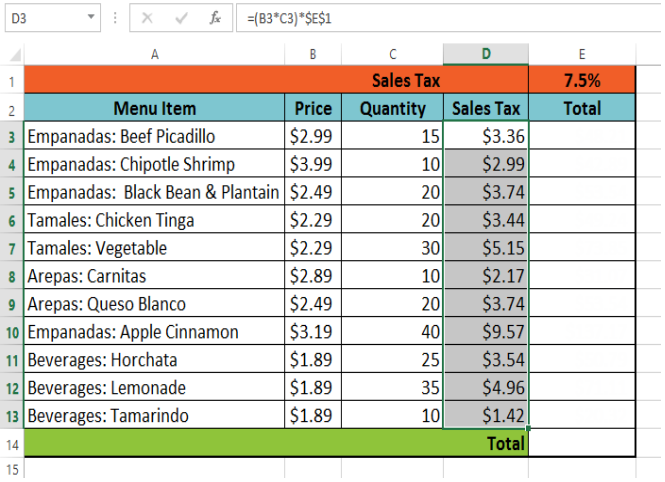
	A	B	C	D	E
1			Sales Tax		7.5%
2	Menu Item	Price	Quantity	Sales Tax	Total
3	Empanadas: Beef Picadillo	$2.99	15	$3.36	
4	Empanadas: Chipotle Shrimp	$3.99	10		
5	Empanadas: Black Bean & Plantain	$2.49	20		
6	Tamales: Chicken Tinga	$2.29	20		
7	Tamales: Vegetable	$2.29	30		
8	Arepas: Carnitas	$2.89	10		
9	Arepas: Queso Blanco	$2.49	20		
10	Empanadas: Apple Cinnamon	$3.19	40		
11	Beverages: Horchata	$1.89	25		
12	Beverages: Lemonade	$1.89	35		
13	Beverages: Tamarindo	$1.89	10		
14				Total	
15					

5. Click, hold, and drag the **fill handle** over the cells you want to fill: cells **D4:D13** in our example.



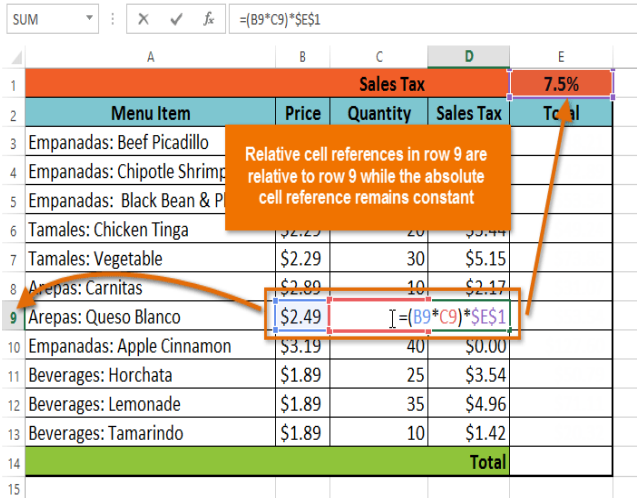
	A	B	C	D	E
1					%
2	Menu Item	Price	Quantity	Sales Tax	Total
3	Empanadas: Beef Picadillo	$2.99	15	$3.36	
4	Empanadas: Chipotle Shrimp	$3.99	10		
5	Empanadas: Black Bean & Plantain	$2.49	20		
6	Tamales: Chicken Tinga	$2.29	20		
7	Tamales: Vegetable	$2.29	30		
8	Arepas: Carnitas	$2.89	10		
9	Arepas: Queso Blanco	$2.49	20		
10	Empanadas: Apple Cinnamon	$3.19	40		
11	Beverages: Horchata	$1.89	25		
12	Beverages: Lemonade	$1.89	35		
13	Beverages: Tamarindo	$1.89	10		
14				Total	
15					

6. Release the mouse. The formula will be **copied** to the selected cells with an **absolute reference**, and the values will be calculated in each cell.



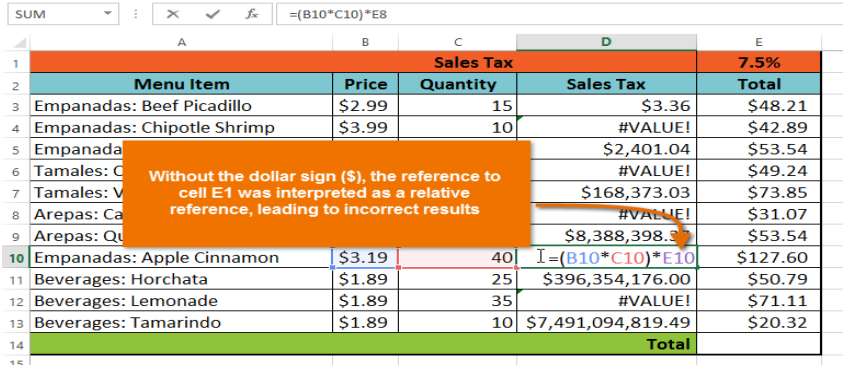
	A	B	C	D	E
1			Sales Tax		7.5%
2	Menu Item	Price	Quantity	Sales Tax	Total
3	Empanadas: Beef Picadillo	$2.99	15	$3.36	
4	Empanadas: Chipotle Shrimp	$3.99	10	$2.99	
5	Empanadas: Black Bean & Plantain	$2.49	20	$3.74	
6	Tamales: Chicken Tinga	$2.29	20	$3.44	
7	Tamales: Vegetable	$2.29	30	$5.15	
8	Arepas: Carnitas	$2.89	10	$2.17	
9	Arepas: Queso Blanco	$2.49	20	$3.74	
10	Empanadas: Apple Cinnamon	$3.19	40	$9.57	
11	Beverages: Horchata	$1.89	25	$3.54	
12	Beverages: Lemonade	$1.89	35	$4.96	
13	Beverages: Tamarindo	$1.89	10	$1.42	
14				Total	
15					

You can double-click the **filled cells** to check their formulas for accuracy. The absolute reference should be the same for each cell, while the other references are relative to the cell's row.



	A	B	C	D	E
1			Sales Tax		7.5%
2	Menu Item	Price	Quantity	Sales Tax	Total
3	Empanadas: Beef Picadillo				
4	Empanadas: Chipotle Shrimp				
5	Empanadas: Black Bean & P				
6	Tamales: Chicken Tinga				
7	Tamales: Vegetable	$2.29	30	$5.15	
8	Arepas: Carnitas	$2.89	10	$2.17	
9	Arepas: Queso Blanco	$2.49	20	$3.74	
10	Empanadas: Apple Cinnamon	$3.19	40	$0.00	
11	Beverages: Horchata	$1.89	25	$3.54	
12	Beverages: Lemonade	$1.89	35	$4.96	
13	Beverages: Tamarindo	$1.89	10	$1.42	
14				Total	
15					

Be sure to include the **dollar sign ($)** whenever you're making an absolute reference across multiple cells. The dollar signs were omitted in the example below. This caused Excel to interpret it as a relative reference, producing an incorrect result when copied to other cells.



	A	B	C	D	E
1			Sales Tax		7.5%
2	Menu Item	Price	Quantity	Sales Tax	Total
3	Empanadas: Beef Picadillo	$2.99	15	$3.36	$48.21
4	Empanadas: Chipotle Shrimp	$3.99	10	#VALUE!	$42.89
5	Empanada			$2,401.04	$53.54
6	Tamales: C			#VALUE!	$49.24
7	Tamales: V			$168,373.03	$73.85
8	Arepas: Ca			#VALUE!	$31.07
9	Arepas: Qu			$8,388,398.3	$53.54
10	Empanadas: Apple Cinnamon	$3.19	40	=(B10*C10)*E10	$127.60
11	Beverages: Horchata	$1.89	25	$396,354,176.00	$50.79
12	Beverages: Lemonade	$1.89	35	#VALUE!	$71.11
13	Beverages: Tamarindo	$1.89	10	$7,491,094,819.49	$20.32
14				Total	

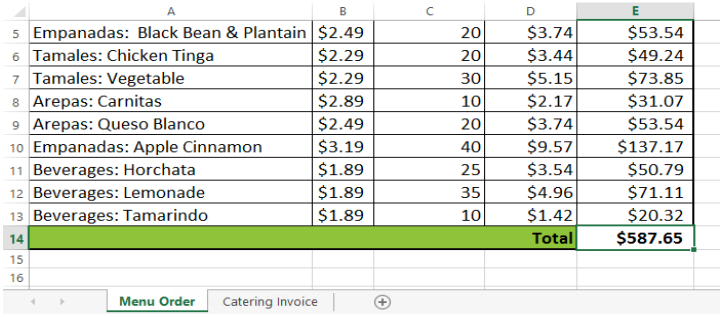
Using cell references with multiple worksheets

Excel allows you to refer to any cell on any **worksheet**, which can be especially helpful if you want to reference a specific value from one worksheet to another. To do this, you'll simply need to begin the cell reference with the **worksheet name** followed by an **exclamation point** (**!**). For example, if you wanted to reference cell **A1** on **Sheet1**, its cell reference would be **Sheet1!A1**.

Note that if a worksheet name contains a **space**, you will need to include **single quotation marks** (' ') around the name. For example, if you wanted to reference cell **A1** on a worksheet named **July Budget**, its cell reference would be **'July Budget'!A1**.

To reference cells across worksheets:

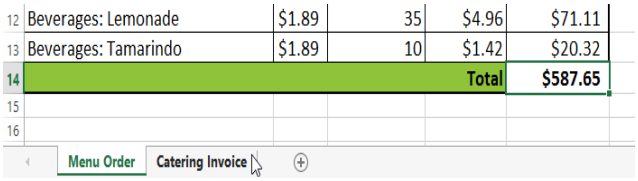
In our example below, we'll refer to a cell with a calculated value between two worksheets. This will allow us to use the **exact same value** on two different worksheets without rewriting the formula or copying data between worksheets.



	A	B	C	D	E
5	Empanadas: Black Bean & Plantain	$2.49	20	$3.74	$53.54
6	Tamales: Chicken Tinga	$2.29	20	$3.44	$49.24
7	Tamales: Vegetable	$2.29	30	$5.15	$73.85
8	Arepas: Carnitas	$2.89	10	$2.17	$31.07
9	Arepas: Queso Blanco	$2.49	20	$3.74	$53.54
10	Empanadas: Apple Cinnamon	$3.19	40	$9.57	$137.17
11	Beverages: Horchata	$1.89	25	$3.54	$50.79
12	Beverages: Lemonade	$1.89	35	$4.96	$71.11
13	Beverages: Tamarindo	$1.89	10	$1.42	$20.32
14				Total	$587.65
15					
16					

Menu Order | Catering Invoice

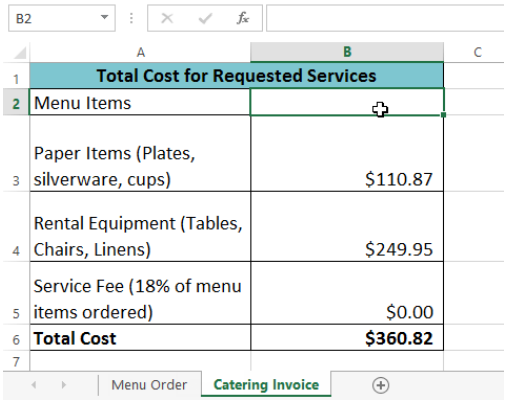
1. Locate the cell you want to reference, and note its worksheet. In our example, we want to reference cell **E14** on the **Menu Order worksheet**.
2. Navigate to the desired **worksheet**. In our example, we'll select the **Catering Invoice** worksheet.



12	Beverages: Lemonade	$1.89	35	$4.96	$71.11
13	Beverages: Tamarindo	$1.89	10	$1.42	$20.32
14				Total	$587.65
15					
16					

Menu Order | Catering Invoice

3. The **selected worksheet** will appear.
4. Locate and select the **cell** where you want the value to appear. In our example, we'll select cell **B2**.

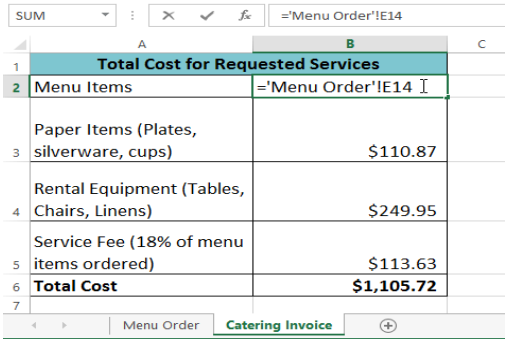


B2

	A	B	C
1	Total Cost for Requested Services		
2	Menu Items		
3	Paper Items (Plates, silverware, cups)	$110.87	
4	Rental Equipment (Tables, Chairs, Linens)	$249.95	
5	Service Fee (18% of menu items ordered)	$0.00	
6	**Total Cost**	**$360.82**	
7			

Menu Order | Catering Invoice

5. Type the **equals sign (=)**, the **sheet name** followed by an **exclamation point** (**!**), and the **cell address**. In our example, we'll type **='Menu Order'!E14**.

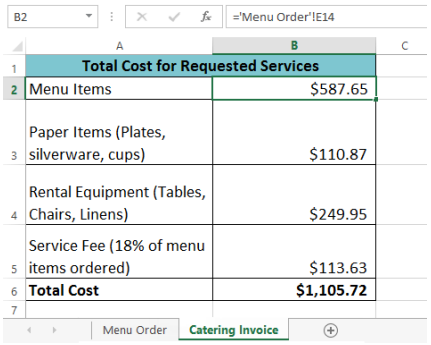


SUM ='Menu Order'!E14

	A	B	C
1	Total Cost for Requested Services		
2	Menu Items	='Menu Order'!E14	
3	Paper Items (Plates, silverware, cups)	$110.87	
4	Rental Equipment (Tables, Chairs, Linens)	$249.95	
5	Service Fee (18% of menu items ordered)	$113.63	
6	**Total Cost**	**$1,105.72**	
7			

Menu Order | Catering Invoice

6. Press **Enter** on your keyboard. The **value** of the referenced cell will appear. If the **value** of cell E14 changes on the Menu Order worksheet, it will be **updated** automatically on the Catering Invoice worksheet.



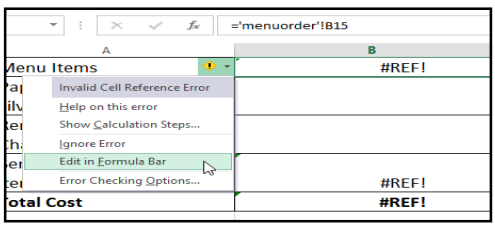
B2 ='Menu Order'!E14

	A	B	C
1	Total Cost for Requested Services		
2	Menu Items	$587.65	
3	Paper Items (Plates, silverware, cups)	$110.87	
4	Rental Equipment (Tables, Chairs, Linens)	$249.95	
5	Service Fee (18% of menu items ordered)	$113.63	
6	**Total Cost**	**$1,105.72**	
7			

Menu Order | Catering Invoice

If you **rename** your worksheet at a later point, the cell reference will be updated automatically to reflect the new worksheet name.

If you enter a worksheet name incorrectly, the **#REF!** error will appear in the cell. In our example below, we've mistyped the name of the worksheet. Click the **Error** button and select the desired option from the drop-down menu to **edit** or **ignore** the error.



='menuorder'!B15

	A	B
	Menu Items	#REF!
	Total Cost	#REF!

Invalid Cell Reference Error
Help on this error
Show Calculation Steps...
Ignore Error
Edit in Formula Bar
Error Checking Options...

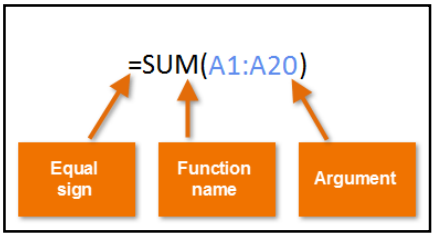
Chapter-13 Functions

Introduction

A **function** is a **predefined formula** that performs calculations using specific values in a particular order. Excel includes many common functions that can be useful for quickly finding the **sum**, **average**, **count**, **maximum value**, and **minimum value** for a range of cells. In order to use functions correctly, you'll need to understand the different **parts of a function** and how to create **arguments** to calculate values and cell references.

The parts of a function

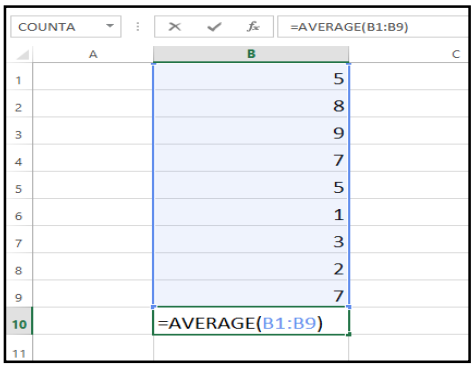
In order to work correctly, a function must be written a specific way, which is called the **syntax**. The basic syntax for a function is the **equals sign (=)**, the **function name** (SUM, for example), and one or more **arguments**. Arguments contain the information you want to calculate. The function in the example below would add the values of the cell range A1:A20.



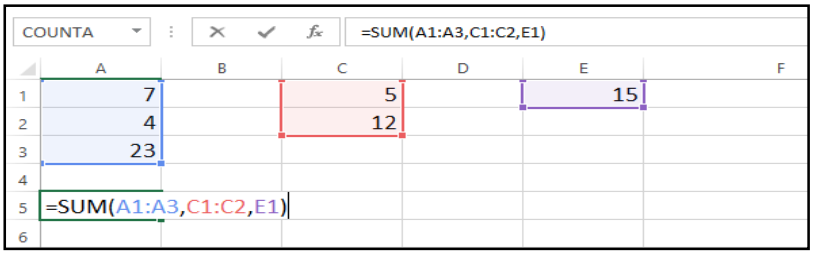
Working with arguments

Arguments can refer to both **individual cells** and **cell ranges** and must be enclosed within **parentheses**. You can include one argument or multiple arguments, depending on the syntax required for the function.

For example, the function **=AVERAGE(B1:B9)** would calculate the **average** of the values in the cell range B1:B9. This function contains only one argument.



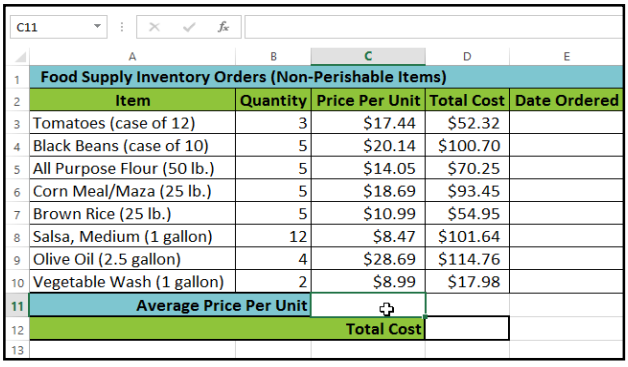
Multiple arguments must be separated by a **comma**. For example, the function **=SUM(A1:A3, C1:C2, E1)** will **add** the values of all the cells in the three arguments.



Creating a function

Excel has a variety of functions available. Here are some of the most common functions you'll use:

- **SUM**: This function **adds** all of the values of the cells in the argument.
- **AVERAGE**: This function determines the **average** of the values included in the argument. It calculates the sum of the cells and then divides that value by the number of cells in the argument.
- **COUNT**: This function **counts** the number of cells with numerical data in the argument. This function is useful for quickly counting items in a cell range.
- **MAX**: This function determines the **highest cell value** included in the argument.
- **MIN**: This function determines the **lowest cell value** included in the argument.



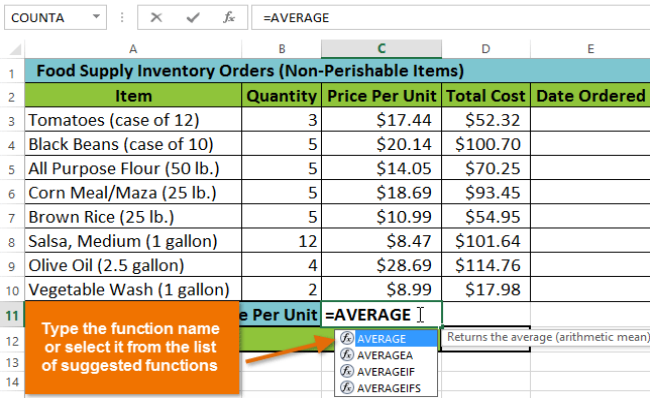
Food Supply Inventory Orders (Non-Perishable Items)				
Item	Quantity	Price Per Unit	Total Cost	Date Ordered
Tomatoes (case of 12)	3	$17.44	$52.32	
Black Beans (case of 10)	5	$20.14	$100.70	
All Purpose Flour (50 lb.)	5	$14.05	$70.25	
Corn Meal/Maza (25 lb.)	5	$18.69	$93.45	
Brown Rice (25 lb.)	5	$10.99	$54.95	
Salsa, Medium (1 gallon)	12	$8.47	$101.64	
Olive Oil (2.5 gallon)	4	$28.69	$114.76	
Vegetable Wash (1 gallon)	2	$8.99	$17.98	
Average Price Per Unit				
Total Cost				

To create a basic function:

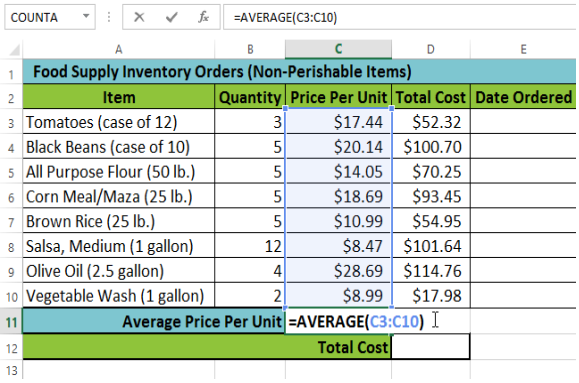
In our example below, we'll create a basic function to calculate the **average price per unit** for a list of recently ordered items using the AVERAGE function.

1. Select the **cell** that will contain the function. In our example, we'll select cell **C11**.

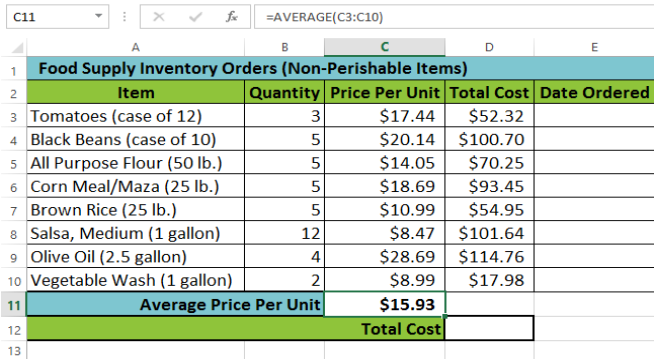
2. Type the **equals sign (=)** and enter the desired **function name**. You can also select the desired function from the list of **suggested functions** that will appear below the cell as you type. In our example, we'll type **=AVERAGE**.



3. Enter the **cell range** for the **argument** inside **parentheses**. In our example, we'll type **(C3:C10)**. This formula will add the values of cells C3:C10 and then divide that value by the total number of cells in the range to determine the average.



4. Press **Enter** on your keyboard. The function will be **calculated**, and the **result** will appear in the cell. In our example, the average price per unit of items ordered was **$15.93**.

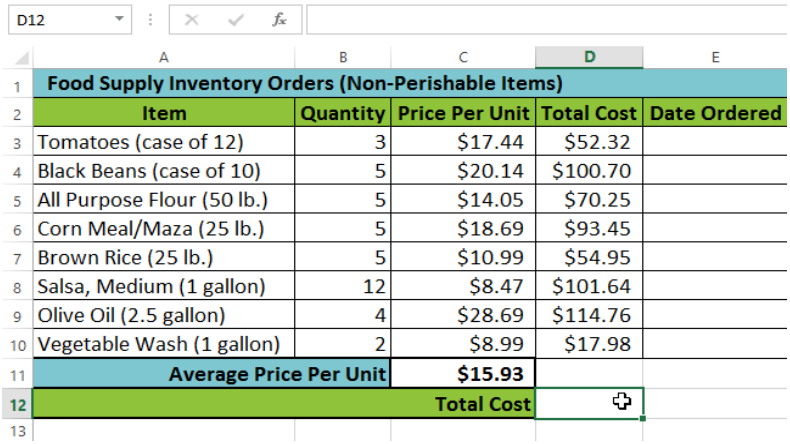


Excel **will not always tell you** if your formula contains an error, so it's up to you to check all of your formulas. To learn how to do this, read the **Double-Check Your Formulas** lesson from our **Excel Formulas** tutorial.

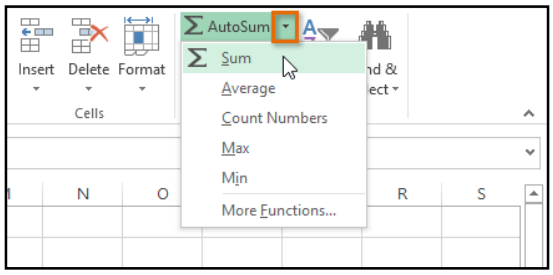
To create a function using the AutoSum command:

The **AutoSum** command allows you to automatically insert the most common functions into your formula, including SUM, AVERAGE, COUNT, MIN, and MAX. In our example below, we'll create a function to calculate the **total cost** for a list of recently ordered items using the SUM function.

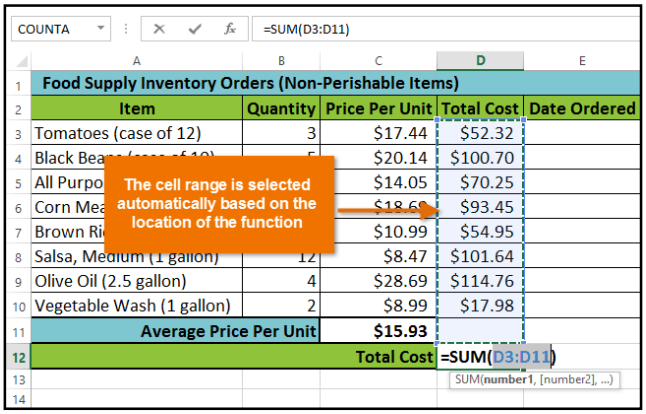
1. Select the **cell** that will contain the function. In our example, we'll select cell **D12**.



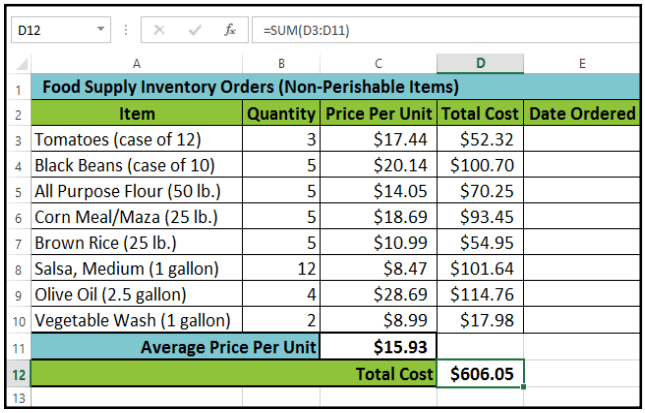
2. In the **Editing** group on the **Home** tab, locate and select the **arrow** next to the **AutoSum** command and then choose the **desired function** from the drop-down menu. In our example, we'll select **Sum**.



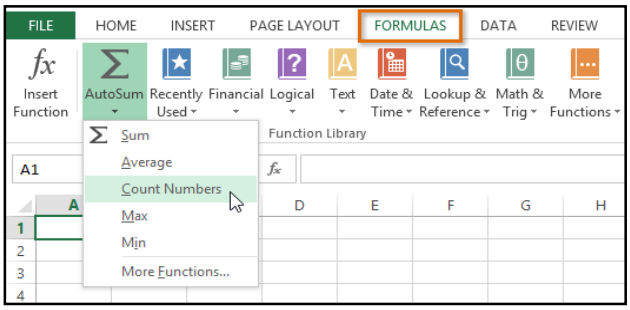
3. The selected **function** will appear in the cell. If logically placed, the AutoSum command will **automatically** select a cell range for the argument. In our example, cells **D3:D11** were selected automatically and their values will be **added** together to calculate the total cost. You can also manually enter the desired cell range into the argument.



4. Press **Enter** on your keyboard. The function will be **calculated**, and the **result** will appear in the cell. In our example, the sum of D3:D11 is **$606.05**.

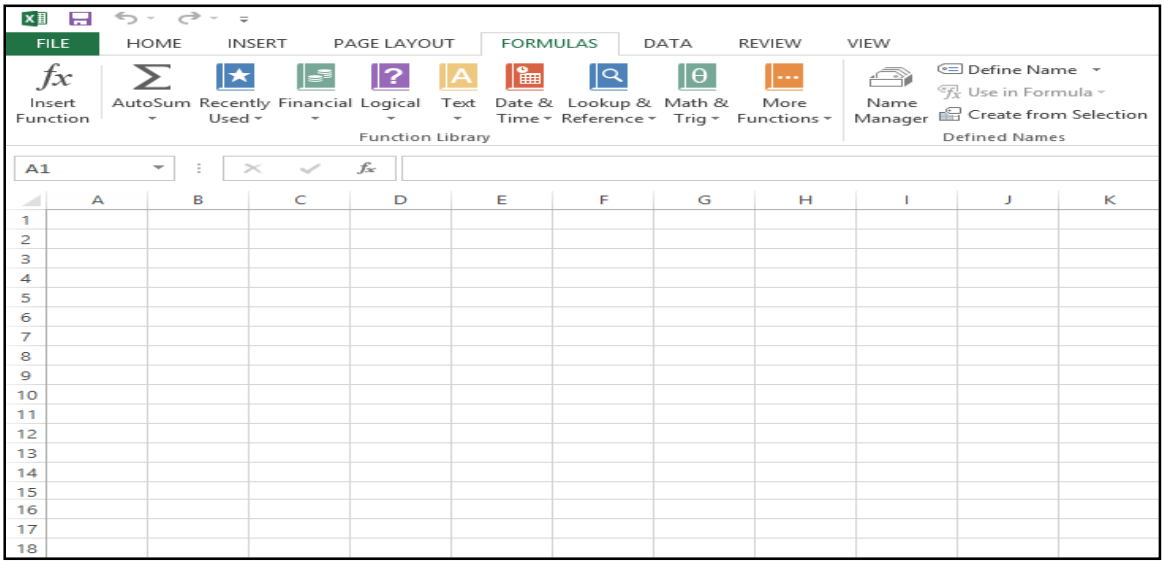


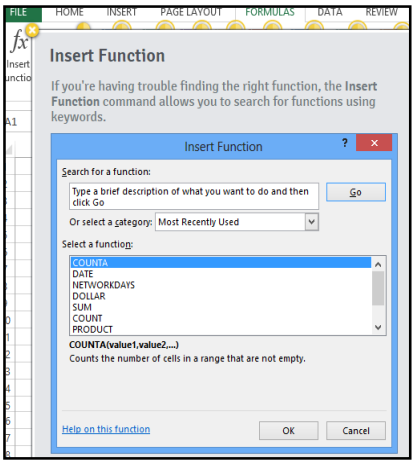
The **AutoSum** command can also be accessed from the **Formulas** tab on the **Ribbon**.

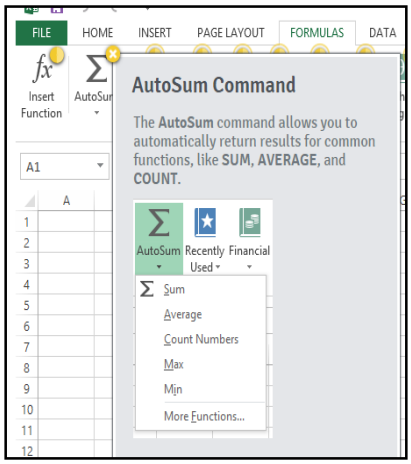


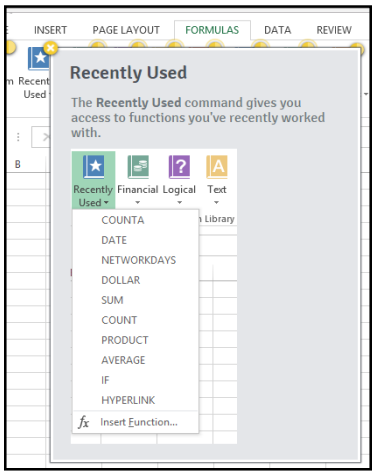
You can also use the **Alt+=** keyboard shortcut instead of the AutoSum command. To use this shortcut, hold down the **Alt** key and then press the **equals sign**.

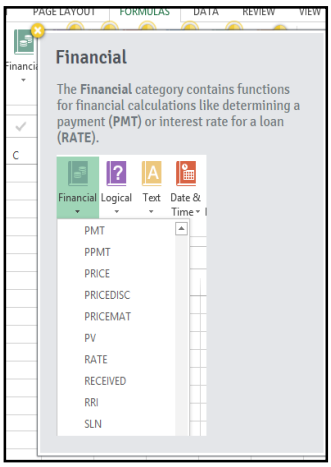
See below to learn more about the different types of functions in Excel

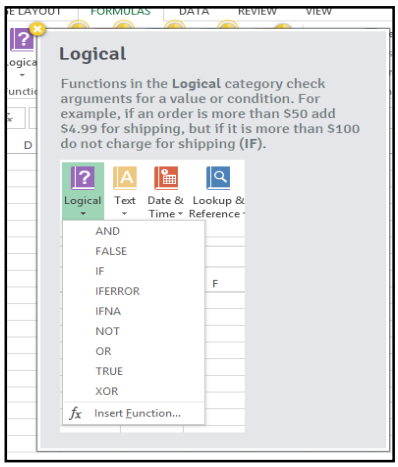


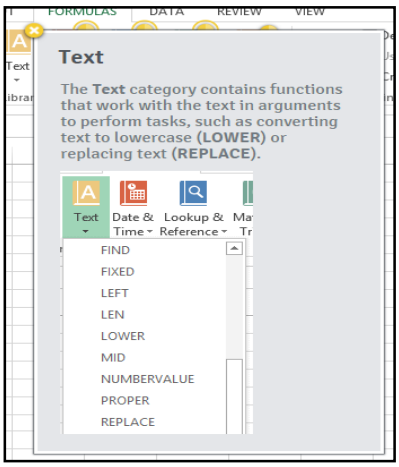

Insert Function
If you're having trouble finding the right function, the Insert Function command allows you to search for functions using keywords.
Insert Function
Search for a function:
Type a brief description of what you want to do and then click Go
Go
Or select a category: Most Recently Used
Select a function:
COUNTA
DATE
NETWORKDAYS
DOLLAR
SUM
COUNT
PRODUCT
COUNTA(value1,value2,...)
Counts the number of cells in a range that are not empty.
Help on this function
OK
Cancel

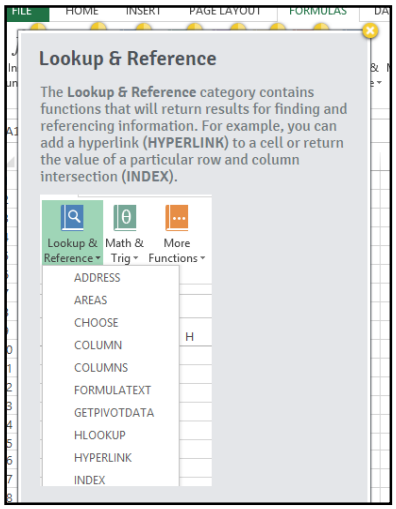

AutoSum Command
The AutoSum command allows you to automatically return results for common functions, like SUM, AVERAGE, and COUNT.
Sum
Average
Count Numbers
Max
Min
More Functions...

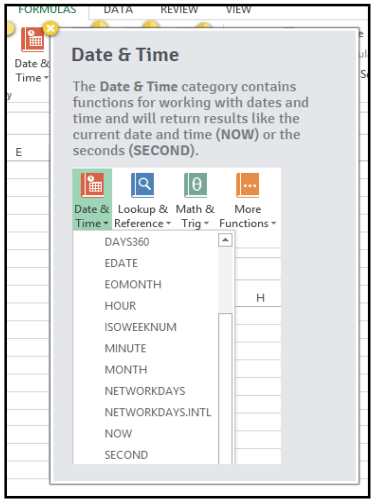

Recently Used
The Recently Used command gives you access to functions you've recently worked with.
COUNTA
DATE
NETWORKDAYS
DOLLAR
SUM
COUNT
PRODUCT
AVERAGE
IF
HYPERLINK
Insert Function...

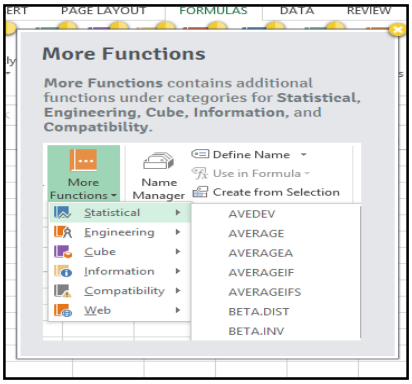

Financial
The Financial category contains functions for financial calculations like determining a payment (PMT) or interest rate for a loan (RATE).
PMT
PPMT
PRICE
PRICEDISC
PRICEMAT
PV
RATE
RECEIVED
RRI
SLN

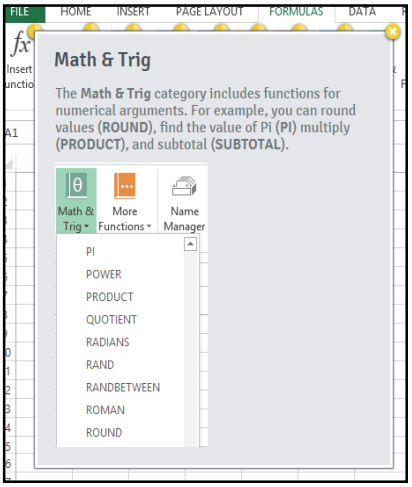

Logical
Functions in the Logical category check arguments for a value or condition. For example, if an order is more than $50 add $4.99 for shipping, but if it is more than $100 do not charge for shipping (IF).
AND
FALSE
IF
IFERROR
IFNA
NOT
OR
TRUE
XOR
Insert Function...


Text
The Text category contains functions that work with the text in arguments to perform tasks, such as converting text to lowercase (LOWER) or replacing text (REPLACE).
FIND
FIXED
LEFT
LEN
LOWER
MID
NUMBERVALUE
PROPER
REPLACE


Lookup & Reference
The Lookup & Reference category contains functions that will return results for finding and referencing information. For example, you can add a hyperlink (HYPERLINK) to a cell or return the value of a particular row and column intersection (INDEX).
ADDRESS
AREAS
CHOOSE
COLUMN
COLUMNS
FORMULATEXT
GETPIVOTDATA
HLOOKUP
HYPERLINK
INDEX

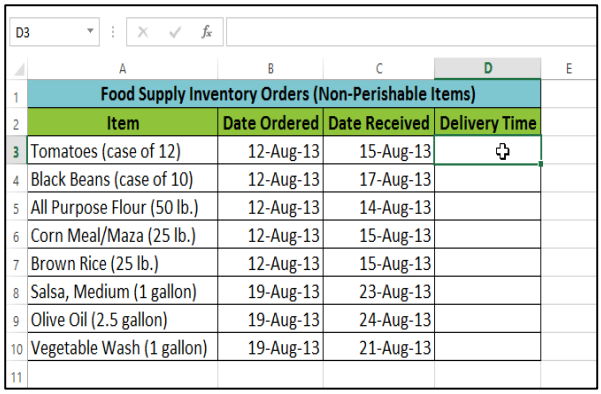

Date & Time
The Date & Time category contains functions for working with dates and time and will return results like the current date and time (NOW) or the seconds (SECOND).
DAYS360
EDATE
EOMONTH
HOUR
ISOWEEKNUM
MINUTE
MONTH
NETWORKDAYS
NETWORKDAYS.INTL
NOW
SECOND


More Functions
More Functions contains additional functions under categories for Statistical, Engineering, Cube, Information, and Compatibility.
Define Name
Use in Formula
Create from Selection
Statistical
Engineering
Cube
Information
Compatibility
Web
AVEDEV
AVERAGE
AVERAGEA
AVERAGEIF
AVERAGEIFS
BETA.DIST
BETA.INV


Math & Trig
The Math & Trig category includes functions for numerical arguments. For example, you can round values (ROUND), find the value of Pi (PI) multiply (PRODUCT), and subtotal (SUBTOTAL).
PI
POWER
PRODUCT
QUOTIENT
RADIANS
RAND
RANDBETWEEN
ROMAN
ROUND

To insert a function from the Function Library:

In our example below, we'll use a function to calculate the **number of business days** it took to receive items after they were ordered. In our example, we'll use the dates in columns **B** and **C** to calculate the delivery time in column **D**.



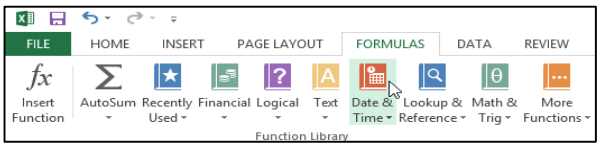
	A	B	C	D	E
1	Food Supply Inventory Orders (Non-Perishable Items)				
2	Item	Date Ordered	Date Received	Delivery Time	
3	Tomatoes (case of 12)	12-Aug-13	15-Aug-13		
4	Black Beans (case of 10)	12-Aug-13	17-Aug-13		
5	All Purpose Flour (50 lb.)	12-Aug-13	14-Aug-13		
6	Corn Meal/Maza (25 lb.)	12-Aug-13	15-Aug-13		
7	Brown Rice (25 lb.)	12-Aug-13	15-Aug-13		
8	Salsa, Medium (1 gallon)	19-Aug-13	23-Aug-13		
9	Olive Oil (2.5 gallon)	19-Aug-13	24-Aug-13		
10	Vegetable Wash (1 gallon)	19-Aug-13	21-Aug-13		
11					

1. Select the **cell** that will contain the function. In our example, we'll select cell **D3**.

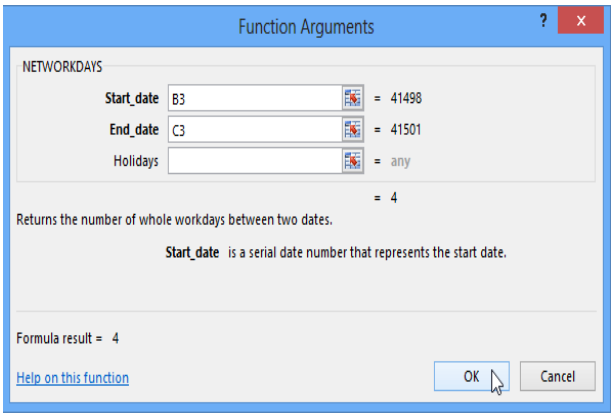
2. Click the **Formulas** tab on the **Ribbon** to access the **Function Library**.

3. From the **Function Library** group, select the desired **function category**. In our example, we'll choose **Date & Time**.

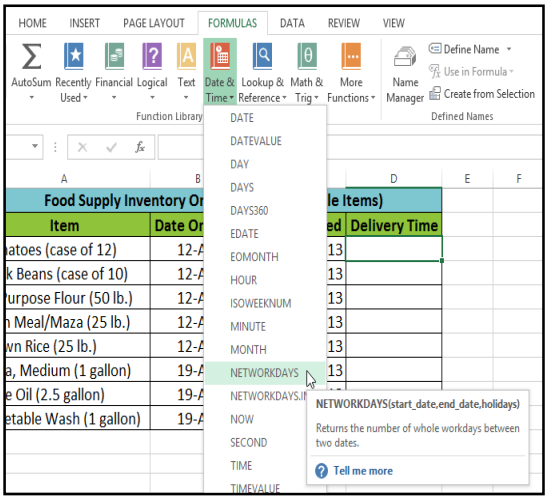
4. Select the **desired function** from the drop-down menu. In our example, we'll select the **NETWORKDAYS** function to count the number of business days between the ordered date and received date.



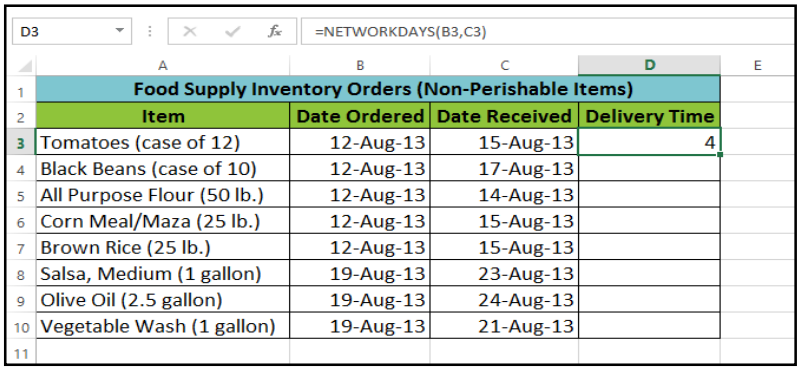
5. The **Function Arguments** dialog box will appear. From here, you'll be able to enter or select the cells that will make up the arguments in the function. In our example, we'll enter **B3** in the **Start date:** field and **C3** in the **End date:** field.



6. When you're satisfied with the arguments, click **OK**.



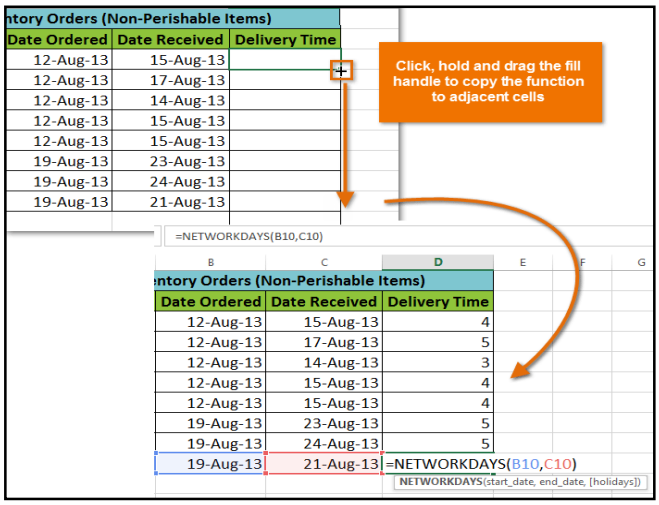
7. The function will be **calculated,** and the **result** will appear in the cell. In our example, the result shows that it took **four business days** to receive the order.



D3 =NETWORKDAYS(B3,C3)

	A	B	C	D	E
1	Food Supply Inventory Orders (Non-Perishable Items)				
2	Item	Date Ordered	Date Received	Delivery Time	
3	Tomatoes (case of 12)	12-Aug-13	15-Aug-13	4	
4	Black Beans (case of 10)	12-Aug-13	17-Aug-13		
5	All Purpose Flour (50 lb.)	12-Aug-13	14-Aug-13		
6	Corn Meal/Maza (25 lb.)	12-Aug-13	15-Aug-13		
7	Brown Rice (25 lb.)	12-Aug-13	15-Aug-13		
8	Salsa, Medium (1 gallon)	19-Aug-13	23-Aug-13		
9	Olive Oil (2.5 gallon)	19-Aug-13	24-Aug-13		
10	Vegetable Wash (1 gallon)	19-Aug-13	21-Aug-13		
11					

Like formulas, functions can be copied to adjacent cells. Hover the mouse over the **cell** that contains the function, then click, hold, and drag the **fill handle** over the cells you want to fill. The function will be copied, and values for those cells will be calculated relative to their rows or columns.



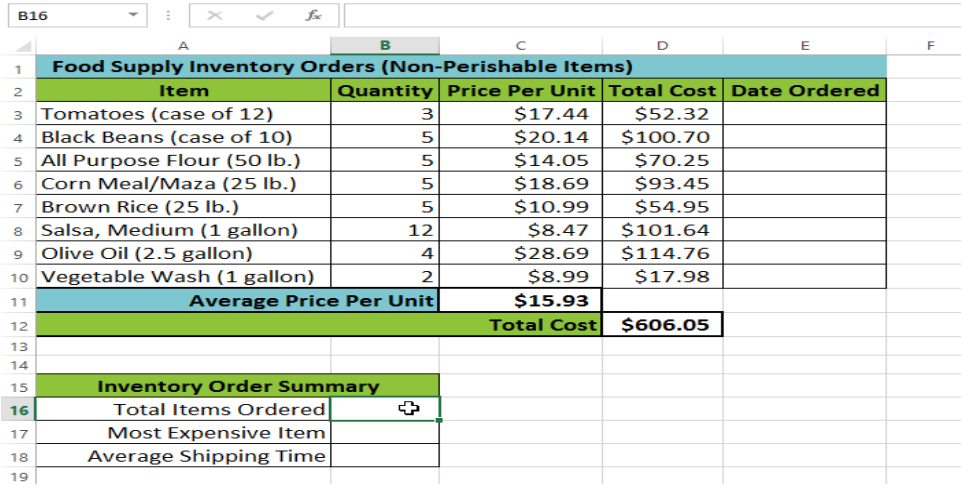
The Insert Function command

If you're having trouble finding the right function, the **Insert Function** command allows you to search for functions using **keywords**. While it can be useful, this command is sometimes difficult to use. If you don't have much experience with functions, you may have more success browsing the **Function Library** instead. For more **advanced users**, however, the Insert Function command can be a powerful way to find a function quickly.

To use the Insert Function command:

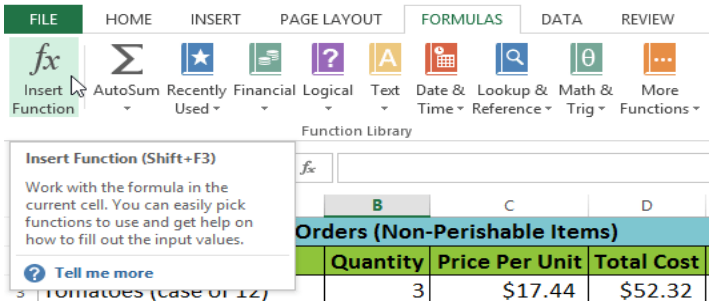
In our example below, we want to find a function that will count the total number of **items** ordered. We want to count the cells in the **Item** column, which uses text. We cannot use the basic COUNT function because it will only count cells with numerical information. Instead, we will need to find a function that counts the **total number of cells** within a cell range.

1. Select the **cell** that will contain the function. In our example, we'll select cell **B16**.

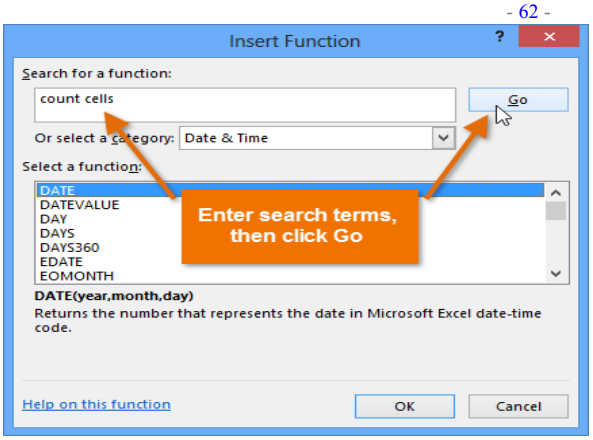


	A	B	C	D	E	F
1	Food Supply Inventory Orders (Non-Perishable Items)					
2	Item	Quantity	Price Per Unit	Total Cost	Date Ordered	
3	Tomatoes (case of 12)	3	$17.44	$52.32		
4	Black Beans (case of 10)	5	$20.14	$100.70		
5	All Purpose Flour (50 lb.)	5	$14.05	$70.25		
6	Corn Meal/Maza (25 lb.)	5	$18.69	$93.45		
7	Brown Rice (25 lb.)	5	$10.99	$54.95		
8	Salsa, Medium (1 gallon)	12	$8.47	$101.64		
9	Olive Oil (2.5 gallon)	4	$28.69	$114.76		
10	Vegetable Wash (1 gallon)	2	$8.99	$17.98		
11	Average Price Per Unit		$15.93			
12	Total Cost			$606.05		
13						
14						
15	Inventory Order Summary					
16	Total Items Ordered					
17	Most Expensive Item					
18	Average Shipping Time					
19						

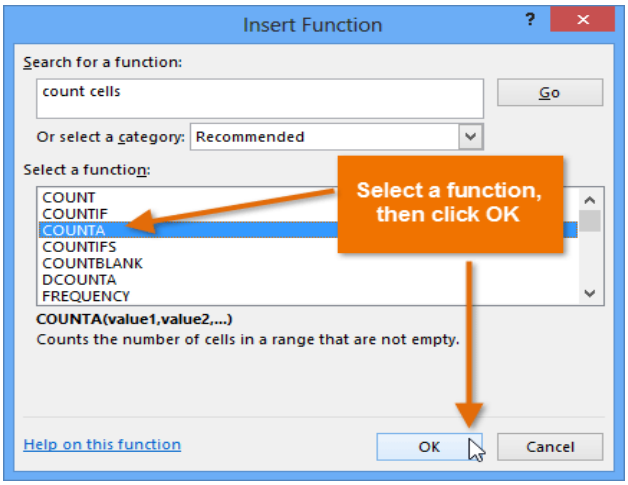
2. Click the **Formulas** tab on the **Ribbon**, then select the **Insert Function** command.



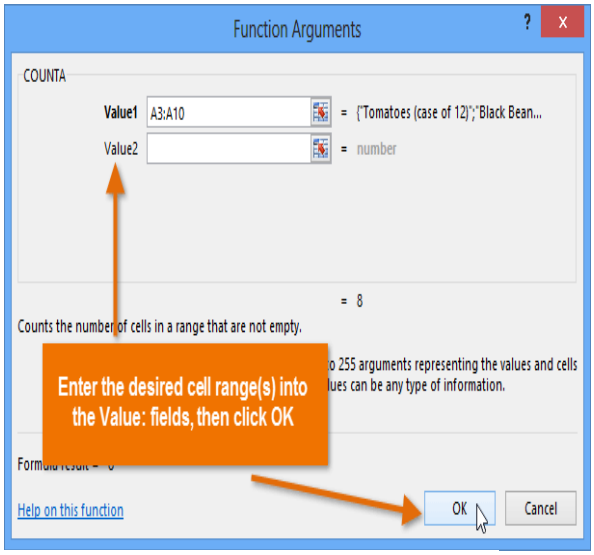
3. The **Insert Function** dialog box will appear.
4. Type a few **keywords** describing the calculation you want the function to perform, then click **Go**. In our example, we'll type **Count cells**, but you can also search by selecting a **category** from the drop-down list.



5. Review the **results** to find the desired function, then click **OK**. In our example, we'll choose **COUNTA** because it will count the number of cells in a cell range.



6. The **Function Arguments** dialog box will appear. Select the **Value1:** field, then enter or select the desired cells. In our example, we'll enter the cell range **A3:A10**. You may continue to add arguments in the **Value2**: field, but in this case we only want to count the number of cells in the cell range **A3:A10**.
7. When you're satisfied, click **OK**.



8. The function will be **calculated**, and the **result** will appear in the cell. In our example, the result shows that a total of **eight items** were ordered.

B16 =COUNTA(A3:A10)

	A	B	C	D	E	F
1	**Food Supply Inventory Orders (Non-Perishable Items)**					
2	**Item**	**Quantity**	**Price Per Unit**	**Total Cost**	**Date Ordered**	
3	Tomatoes (case of 12)	3	$17.44	$52.32		
4	Black Beans (case of 10)	5	$20.14	$100.70		
5	All Purpose Flour (50 lb.)	5	$14.05	$70.25		
6	Corn Meal/Maza (25 lb.)	5	$18.69	$93.45		
7	Brown Rice (25 lb.)	5	$10.99	$54.95		
8	Salsa, Medium (1 gallon)	12	$8.47	$101.64		
9	Olive Oil (2.5 gallon)	4	$28.69	$114.76		
10	Vegetable Wash (1 gallon)	2	$8.99	$17.98		
11	**Average Price Per Unit**		**$15.93**			
12			**Total Cost**	**$606.05**		
13						
14						
15	**Inventory Order Summary**					
16	Total Items Ordered	**8**				
17	Most Expensive Item					
18	Average Shipping Time					
19						

The inserted function and calculated value

Chapter-14 Freezing Panes and View Options

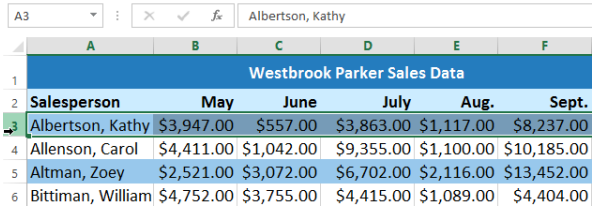
Introduction

Whenever you're working with a lot of data, it can be difficult to **compare** information in your workbook. Fortunately, Excel includes several tools that make it easier to view content from different parts of your workbook at the same time, such as the ability to **freezepanes** and **split** your worksheet.

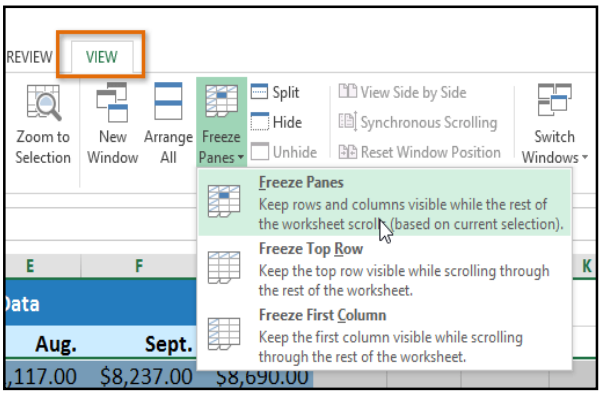
To freeze rows:

You may want to see certain rows or columns all the time in your worksheet, especially **header cells**. By **freezing** rows or columns in place, you'll be able to scroll through your content while continuing to view the frozen cells.

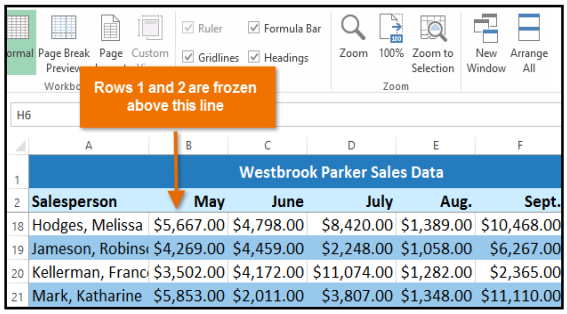
1. Select the **row** below the row(s) you want to **freeze**. In our example, we want to freeze rows **1** and **2**, so we'll select row **3**.



2. Click the **View** tab on the **Ribbon**.
3. Select the **Freeze Panes** command, then choose **Freeze Panes** from the drop-down menu.

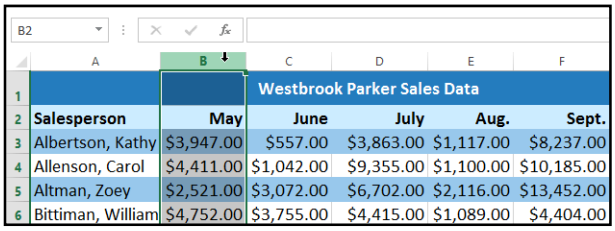


4. The rows will be **frozen** in place, as indicated by the **gray line**. You can **scroll down** the worksheet while continuing to view the frozen rows at the top. In our example, we've scrolled down to row **18**.

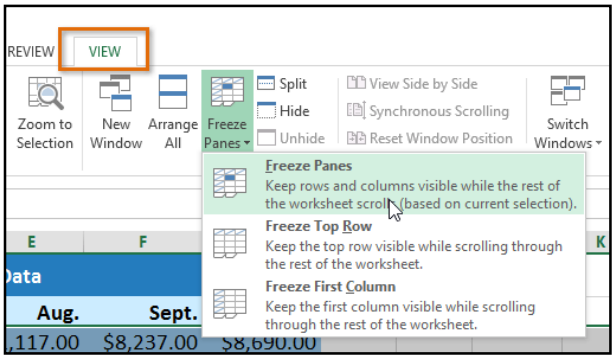


To freeze columns:

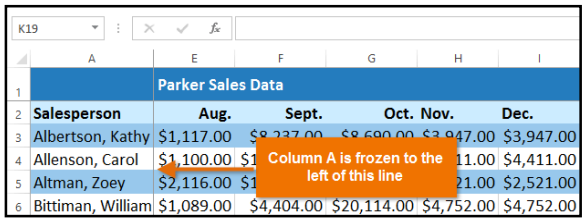
1. Select the **column** to the right of the column(s) you want to **freeze**. In our example, we want to freeze **column A**, so we'll select column **B**.



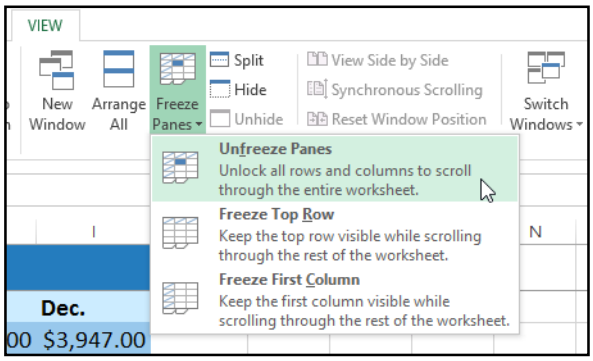
2. Click the **View** tab on the **Ribbon**.
3. Select the **Freeze Panes** command, then choose **Freeze Panes** from the drop-down menu.



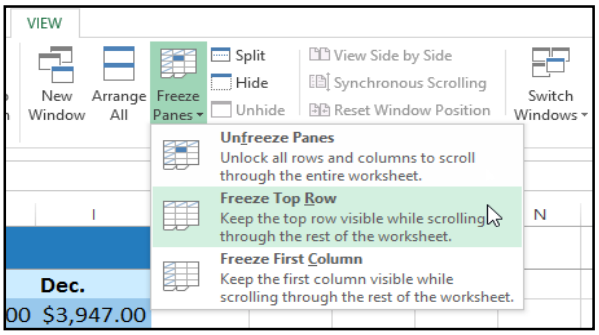
4. The column will be **frozen** in place, as indicated by the **gray line**. You can **scroll across** the worksheet while continuing to view the frozen column on the left. In our example, we've scrolled across to column **E**.



To **unfreeze** rows or columns, click the **Freeze Panes** command, then select **Unfreeze Panes** from the drop-down menu.



If you only need to freeze the **top row** (row 1) or **first column** (column A) in the worksheet, you can simply select **Freeze Top Row** or **Freeze First Column** from the drop-down menu.

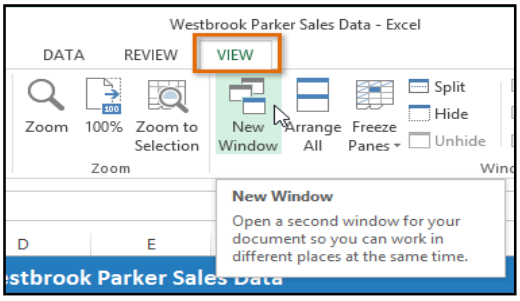


Other view options

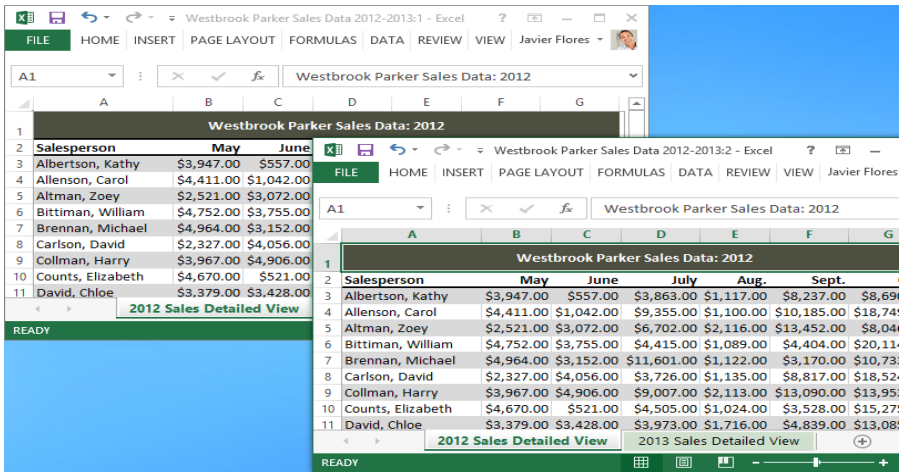
If your workbook contains a lot of content, it can sometimes be difficult to compare different sections. Excel includes additional options to make your workbooks easier to view and compare. For example, you can choose to **open a new window** for your workbook or **split a worksheet** into separate panes.

To open a new window for the current workbook:

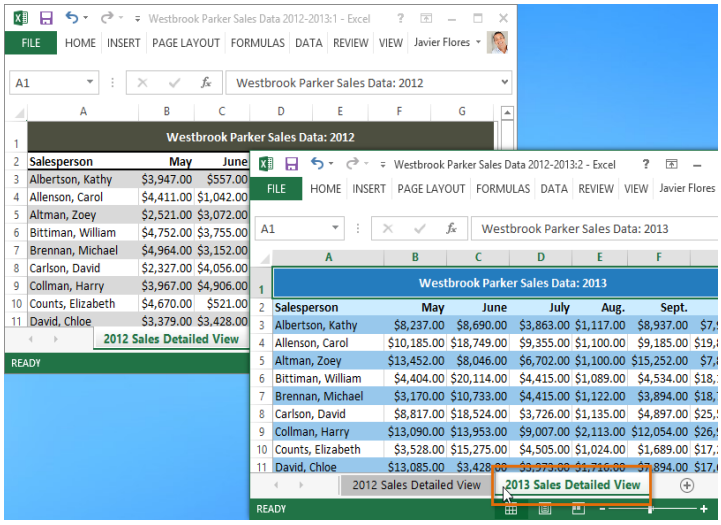
Excel allows you to open **multiple windows** for a single workbook at the same time. In our example, we'll use this feature to compare two different **worksheets** from the same workbook.



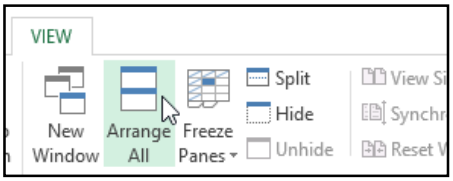
1. Click the **View** tab on the **Ribbon**, then select the **New Window** command.
2. A **new window** for the workbook will appear.



3. You can now compare different worksheets from the same workbook across windows. In our example, we'll select the **2013 Sales Detailed View** worksheet to compare the **2012** and **2013** sales.

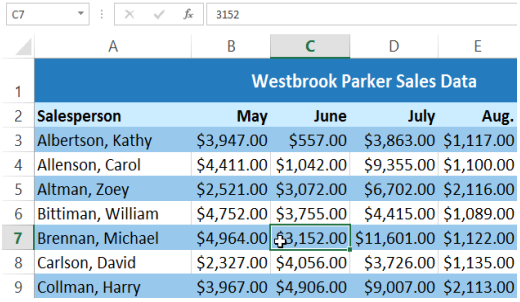


If you have several windows open at the same time, you can use the **Arrange All** command to rearrange them quickly.



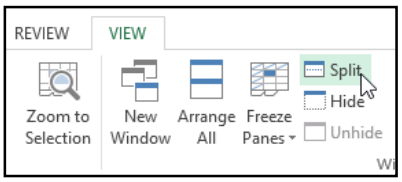
To split a worksheet:

Sometimes you may want to compare different sections of the same workbook without creating a new window.
The **Split** command allows you to **divide** the worksheet into multiple panes that scroll separately.

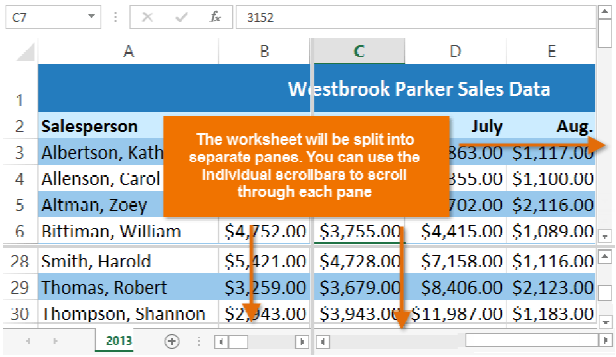


1. Select the **cell** where you want to split the worksheet. In our example, we'll select cell **C7**.

2. Click the **View** tab on the **Ribbon**, then select the **Split** command.



3. The workbook will be **split** into different **panes**. You can scroll through each pane separately using the **scroll bars**, allowing you to compare different sections of the workbook.



After creating a split, you can click and drag the vertical and horizontal dividers to change the size of each section.

To remove the split, click the **Split** command again.

Chapter-15 Sorting Data

Introduction

As you add more content to a worksheet, organizing this information becomes especially important. You can quickly **reorganize** a worksheet by **sorting** your data. For example, you could organize a list of contact information by last name. Content can be sorted alphabetically, numerically, and in many other ways.

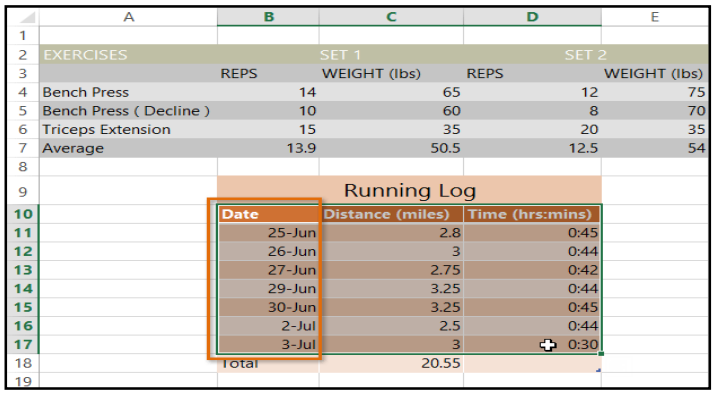
Types of sorting

When sorting data, it's important to first decide if you want the sort to apply to the **entire worksheet** or just a **cell range**.

- **Sort sheet** organizes all of the data in your worksheet by one column. Related information across each row is kept together when the sort is applied. In the example below, the **Contact Name** column (column **A**) has been sorted to display the names in alphabetical order.

	A	B	C	D
1	Customer Contact List			
2	CONTACT NAME	BILLING ADDRESS	PHONE	EMAIL ADDRESS
3	Bell, William	2201 Treasure Court	206-555-2303	wbell@bishopresearch.com
4	Dean, Hank	3034 Foggy Wharf	308-555-1050	hdean@venturebrewing.com
5	Figgis, Mallory	3520 Sleepy Hearth Dr	425-555-5370	malloryf@archerproperties.com
6	Finn, Jake	1407 Dusty Fawn Ln	605-555-6435	jake@adventureoutfitters.com
7	Kinkade, Chris	1028 Quiet Dale Rd	443-555-4942	chris.kinkade@placervilleins.com
8	Lawson, Miranda	5316 Colonial Pkwy	575-555-9255	mlawson@massairlines.com
9	Reyes, Felicia	8544 Lazy Bluff Ave	316-555-3256	felicia@everlypublishing.com
10	Sebastian, Lil	9060 Easy Evening Ln	207-555-7225	lil@knopeequestrian.com
11	Silva, Vivica	8595 Thunder Brook	360-555-4289	vivica@rileygardensupply.com
12	Stark, Katie	971 Cinder Butterfly St	603-555-2460	katie.stark@ariarealestate.com
13	Torrance, Jill	3160 Amber Gate Rd	605-555-4495	jtorrance@overlookinn.com
14	Yuen, Phillip	5108 Crystal Gate Blvd	913-555-5928	yuenp@corepharmaceuticals.com

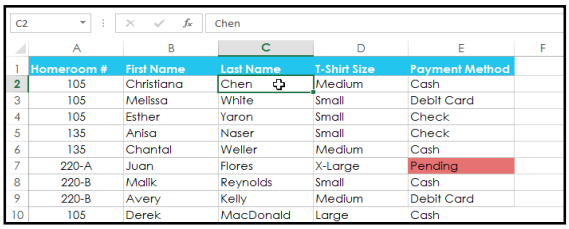
- **Sort range** sorts the data in a range of cells, which can be helpful when working with a sheet that contains several tables. Sorting a range will not affect other content on the worksheet.



	A	B	C	D	E
1					
2	EXERCISES	SET 1		SET 2	
3		REPS	WEIGHT (lbs)	REPS	WEIGHT (lbs)
4	Bench Press	14	65	12	75
5	Bench Press (Decline)	10	60	8	70
6	Triceps Extension	15	35	20	35
7	Average	13.9	50.5	12.5	54
8					
9	Running Log				
10	Date	Distance (miles)	Time (hrs:mins)		
11	25-Jun	2.8	0:45		
12	26-Jun	3	0:44		
13	27-Jun	2.75	0:42		
14	29-Jun	3.25	0:44		
15	30-Jun	3.25	0:45		
16	2-Jul	2.5	0:44		
17	3-Jul	3	0:30		
18	Total	20.55			
19					

To sort a sheet:

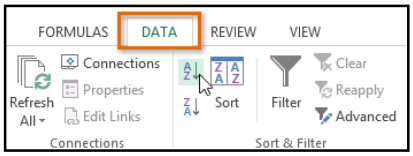
In our example, we'll sort a T-shirt order form alphabetically by **Last Name** (column **C**).



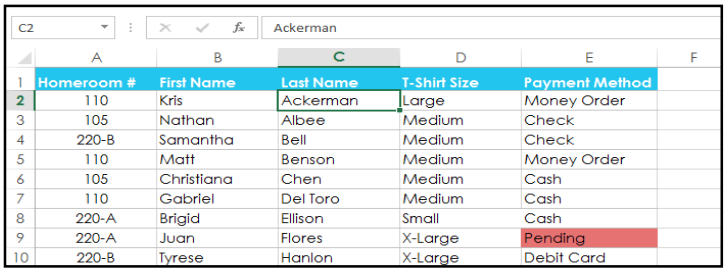
	A	B	C	D	E	F
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Method	
2	105	Christiana	Chen	Medium	Cash	
3	105	Melissa	White	Small	Debit Card	
4	105	Esther	Yaron	Small	Check	
5	135	Anisa	Naser	Small	Check	
6	135	Chantal	Weller	Medium	Cash	
7	220-A	Juan	Flores	X-Large	Pending	
8	220-B	Malik	Reynolds	Small	Cash	
9	220-B	Avery	Kelly	Medium	Debit Card	
10	105	Derek	MacDonald	Large	Cash	

1. Select a **cell** in the column you want to sort by. In our example, we'll select cell **C2**.

2. Select the **Data** tab on the **Ribbon**, then click the **Ascending** command to Sort A to Z, or the **Descending** command to Sort Z to A. In our example, we'll click the **Ascending** command.



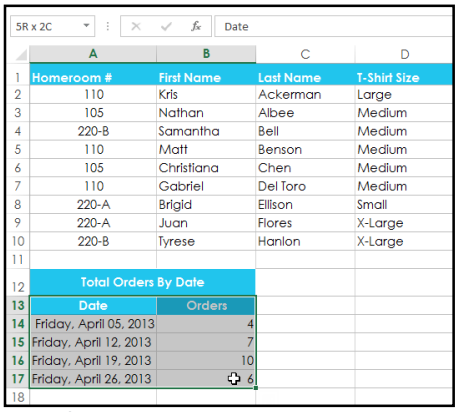
3. The worksheet will be **sorted** by the selected column. In our example, the worksheet is now sorted by **last name**.



	A	B	C	D	E	F
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Method	
2	110	Kris	Ackerman	Large	Money Order	
3	105	Nathan	Albee	Medium	Check	
4	220-B	Samantha	Bell	Medium	Check	
5	110	Matt	Benson	Medium	Money Order	
6	105	Christiana	Chen	Medium	Cash	
7	110	Gabriel	Del Toro	Medium	Cash	
8	220-A	Brigid	Ellison	Small	Cash	
9	220-A	Juan	Flores	X-Large	Pending	
10	220-B	Tyrese	Hanlon	X-Large	Debit Card	

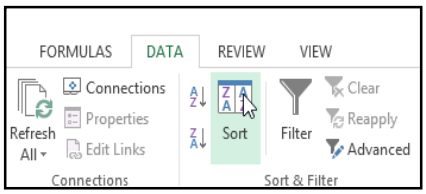
To sort a range:

In our example, we'll select a **separate table** in our T-shirt order form to sort the number of shirts that were ordered on different dates.

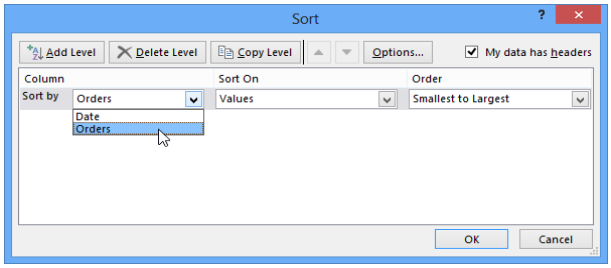


	A	B	C	D
1	Homeroom #	First Name	Last Name	T-Shirt Size
2	110	Kris	Ackerman	Large
3	105	Nathan	Albee	Medium
4	220-B	Samantha	Bell	Medium
5	110	Matt	Benson	Medium
6	105	Christiana	Chen	Medium
7	110	Gabriel	Del Toro	Medium
8	220-A	Brigid	Ellison	Small
9	220-A	Juan	Flores	X-Large
10	220-B	Tyrese	Hanlon	X-Large
11				
12	Total Orders By Date			
13	Date	Orders		
14	Friday, April 05, 2013	4		
15	Friday, April 12, 2013	7		
16	Friday, April 19, 2013	10		
17	Friday, April 26, 2013	6		
18				

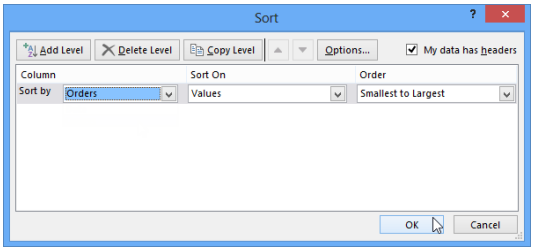
1. Select the **cell range** you want to sort. In our example, we'll select cell range **A13:B17**.
2. Select the **Data** tab on the **Ribbon**, then click the **Sort** command.



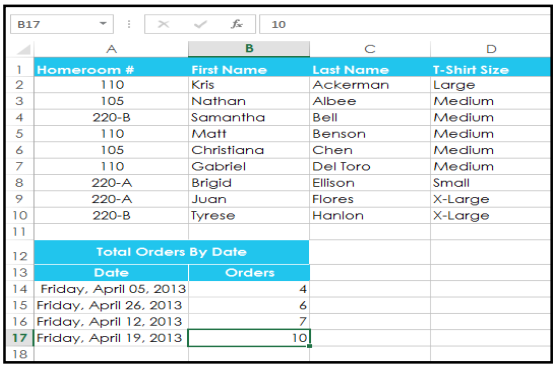
3. The **Sort** dialog box will appear. Choose the **column** you want to sort by. In our example, we want to sort the data by the number of T-shirt orders, so we'll select **Orders**.



4. Decide the **sorting order** (either ascending or descending). In our example, we'll use **Smallest to Largest**.
5. Once you're satisfied with your selection, click **OK**.



6. The cell range will be **sorted** by the selected column. In our example, the Orders column will be sorted from **lowest to highest**. Notice that the other content in the worksheet was not affected by the sort.



	A	B	C	D
1	Homeroom #	First Name	Last Name	T-Shirt Size
2	110	Kris	Ackerman	Large
3	105	Nathan	Albee	Medium
4	220-B	Samantha	Bell	Medium
5	110	Matt	Benson	Medium
6	105	Christiana	Chen	Medium
7	110	Gabriel	Del Toro	Medium
8	220-A	Brigid	Ellison	Small
9	220-A	Juan	Flores	X-Large
10	220-B	Tyrese	Hanlon	X-Large
11				
12	Total Orders By Date			
13	Date	Orders		
14	Friday, April 05, 2013	4		
15	Friday, April 26, 2013	6		
16	Friday, April 12, 2013	7		
17	Friday, April 19, 2013	10		
18				

If your data isn't sorting properly, double-check your cell values to make sure they are entered into the worksheet correctly. Even a small typo could cause problems when sorting a large worksheet. In the example below, we forgot to include a hyphen in cell A18, causing our sort to be slightly inaccurate.

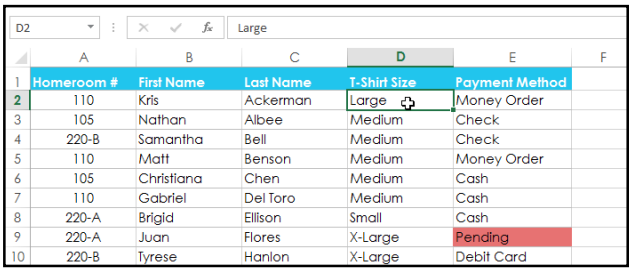
	A	B	C	D
1	Homeroom #	First Name	Last Name	T-Shirt Size
16	135	Jordan	Weller	Large
17	135	Alex	Yuen	Large
18	220A	Christopher	Peyton-Gomez	Small
19	220-A	Brigid	Ellison	Small
20	220-A	Juan	Flores	X-Large
21	220-A	Chevonne	Means	Medium

Custom sorting

Sometimes you may find that the default sorting options can't sort data in the order you need. Fortunately, Excel allows you to create a **custom list** to define your own sorting order.

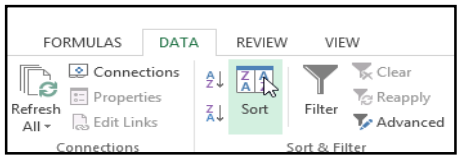
To create a custom sort:

In our example below, we want to sort the worksheet by **T-Shirt Size** (column **D**). A regular sort would organize the sizes alphabetically, which would be incorrect. Instead, we'll create a custom list to sort from smallest to largest.



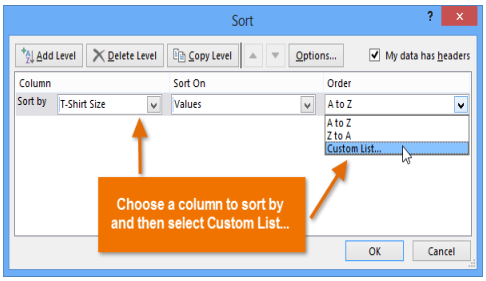
	A	B	C	D	E
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Method
2	110	Kris	Ackerman	Large	Money Order
3	105	Nathan	Albee	Medium	Check
4	220-B	Samantha	Bell	Medium	Check
5	110	Matt	Benson	Medium	Money Order
6	105	Christiana	Chen	Medium	Cash
7	110	Gabriel	Del Toro	Medium	Cash
8	220-A	Brigid	Ellison	Small	Cash
9	220-A	Juan	Flores	X-Large	Pending
10	220-B	Tyrese	Hanlon	X-Large	Debit Card

1. Select a **cell** in the column you want to sort by. In our example, we'll select cell **D2**.



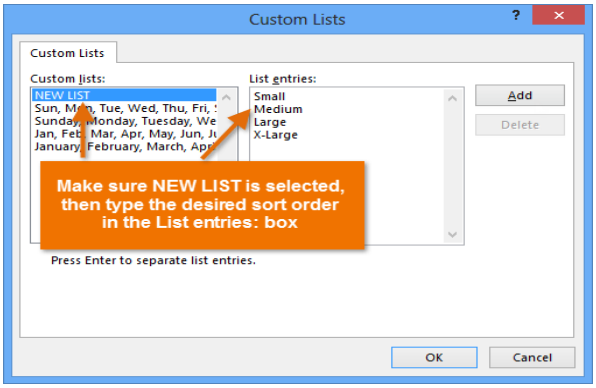
2. Select the **Data** tab, then click the **Sort** command.

3. The **Sort** dialog box will appear. Select the **column** you want to sort by, then choose **Custom List...** from the **Order** field. In our example, we will choose to sort by **T-Shirt Size**.

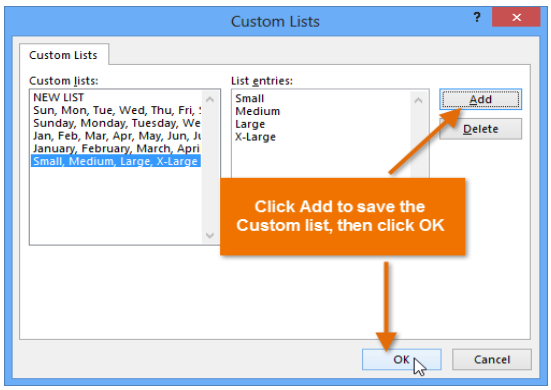


4. The **Custom Lists** dialog box will appear. Select **NEW LIST** from the **Custom Lists:** box.

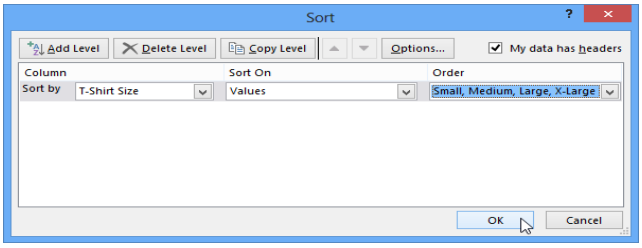
5. Type the items in the desired custom order in the **List entries:** box. In our example, we want to sort our data by T-shirt size from **smallest** to **largest**, so we'll type **Small**, **Medium**, **Large**, and **X-Large**, pressing **Enter** on the keyboard after each item.



6. Click **Add** to save the new sort order. The new list will be added to the **Custom lists:** box. Make sure the new list is **selected**, then click **OK**.



7. The **Custom Lists** dialog box will close. Click **OK** in the **Sort** dialog box to perform the custom sort.



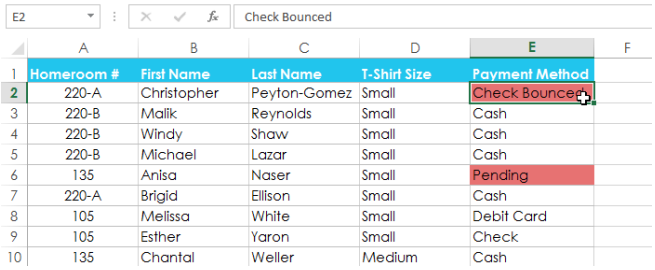
8. The worksheet will be **sorted** by the custom order. In our example, the worksheet is now organized by T-shirt size from smallest to largest.

	A	B	C	D	E
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Method
2	220-A	Brigid	Ellison	Small	Cash
3	220-B	Michael	Lazar	Small	Cash
4	135	Anisa	Naser	Small	Pending
5	220-A	Christopher	Peyton-Gomez	Small	Check Bounced
6	220-B	Malik	Reynolds	Small	Cash
7	220-B	Windy	Shaw	Small	Cash
8	105	Melissa	White	Small	Debit Card
9	105	Esther	Yaron	Small	Check
10	105	Nathan	Albee	Medium	Check
11	220-B	Samantha	Bell	Medium	Check
12	220-B	Avery	Kelly	Medium	Debit Card
13	220-A	Chevonne	Means	Medium	Money Order
14	135	James	Panarello	Medium	Check
15	135	Chantal	Weller	Medium	Cash
16	110	Kris	Ackerman	Large	Money Order
17	105	Derek	MacDonald	Large	Cash

To sort by cell formatting:

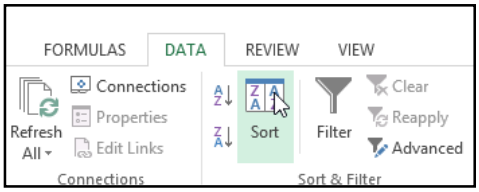
You can also choose to sort your worksheet by **formatting** rather than cell content. This can be especially helpful if you add color coding to certain cells. In our example below, we'll sort by **cell color** to quickly see which T-shirt orders have outstanding payments.

1. Select a **cell** in the column you want to sort by. In our example, we'll select cell **E2**.

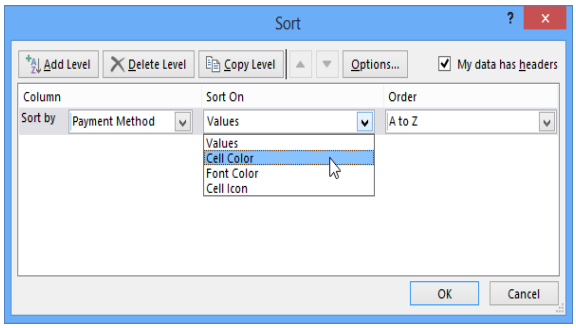


	A	B	C	D	E	F
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Method	
2	220-A	Christopher	Peyton-Gomez	Small	Check Bounced	
3	220-B	Malik	Reynolds	Small	Cash	
4	220-B	Windy	Shaw	Small	Cash	
5	220-B	Michael	Lazar	Small	Cash	
6	135	Anisa	Naser	Small	Pending	
7	220-A	Brigid	Ellison	Small	Cash	
8	105	Melissa	White	Small	Debit Card	
9	105	Esther	Yaron	Small	Check	
10	135	Chantal	Weller	Medium	Cash	

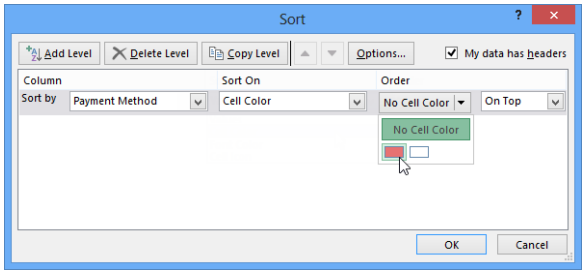
2. Select the **Data** tab, then click the **Sort** command.



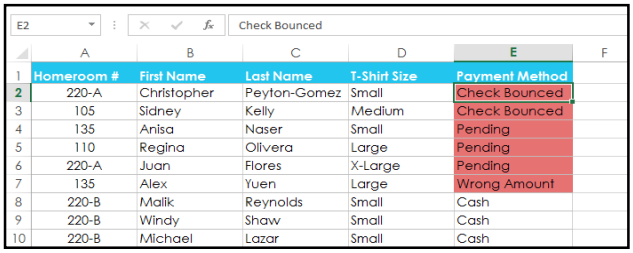
3. The **Sort** dialog box will appear. Select the column you want to sort by, then decide whether you'll sort by **Cell Color**, **Font Color**, or **Cell Icon** from the **Sort On** field. In our example, we'll sort by **Payment Method**(column **E**) and **Cell Color**.



4. Choose a **color** to sort by from the **Order** field. In our example, we'll choose **light red**.



5. Click **OK**. In our example, the worksheet is now sorted by **cell color**, with the light red cells on top. This allows us to see which orders still have outstanding payments.



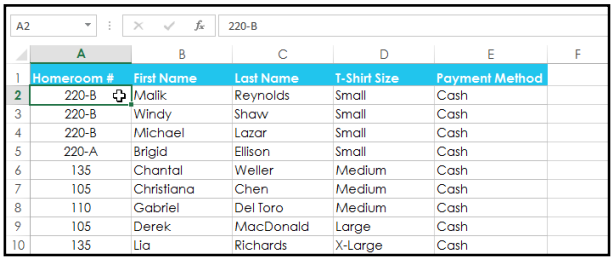
	A	B	C	D	E	F
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Method	
2	220-A	Christopher	Peyton-Gomez	Small	Check Bounced	
3	105	Sidney	Kelly	Medium	Check Bounced	
4	135	Anisa	Naser	Small	Pending	
5	110	Regina	Olivera	Large	Pending	
6	220-A	Juan	Flores	X-Large	Pending	
7	135	Alex	Yuen	Large	Wrong Amount	
8	220-B	Malik	Reynolds	Small	Cash	
9	220-B	Windy	Shaw	Small	Cash	
10	220-B	Michael	Lazar	Small	Cash	

Sorting levels

If you need more control over how your data is sorted, you can add multiple **levels** to any sort. This allows you to sort your data by **more than one column**.

To add a level:

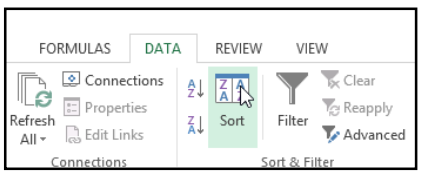
In our example below, we'll sort the worksheet by **Homeroom Number** (column **A**), then by **Last Name** (column **C**).



	A	B	C	D	E	F
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Method	
2	220-B	Malik	Reynolds	Small	Cash	
3	220-B	Windy	Shaw	Small	Cash	
4	220-B	Michael	Lazar	Small	Cash	
5	220-A	Brigid	Ellison	Small	Cash	
6	135	Chantal	Weller	Medium	Cash	
7	105	Christiana	Chen	Medium	Cash	
8	110	Gabriel	Del Toro	Medium	Cash	
9	105	Derek	MacDonald	Large	Cash	
10	135	Lia	Richards	X-Large	Cash	

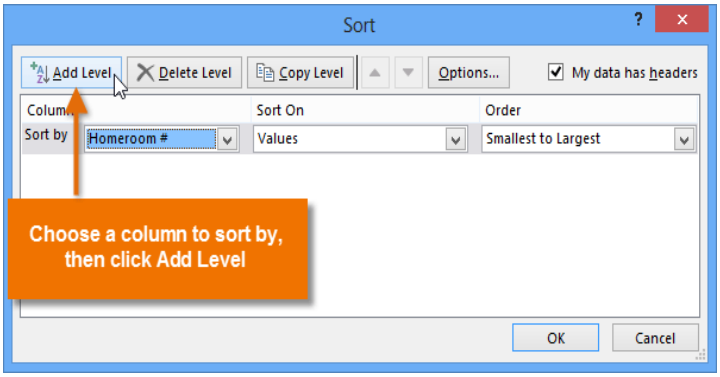
1. Select a **cell** in the column you want to sort by. In our example, we'll select cell **A2**.

2. Click the **Data** tab, then select the **Sort** command.

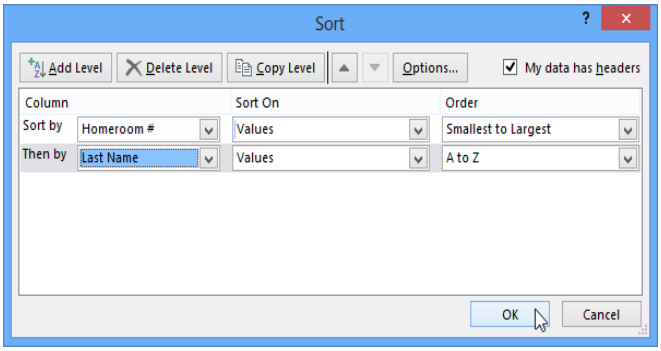


3. The **Sort** dialog box will appear. Select the first column you want to sort by. In this example, we will sort by **Homeroom #** (column **A**).

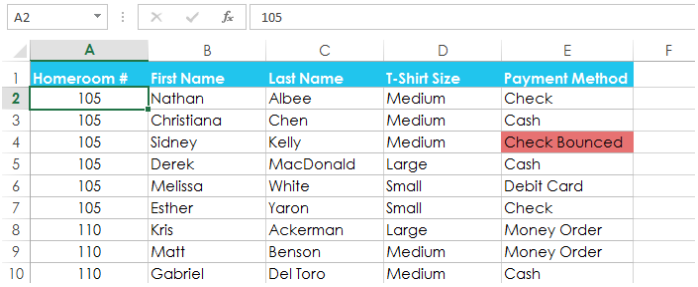
4. Click **Add Level** to add another column to sort by.



5. Select the next column you want to sort by, then click **OK**. In our example, we'll sort by **Last Name** (column **C**).

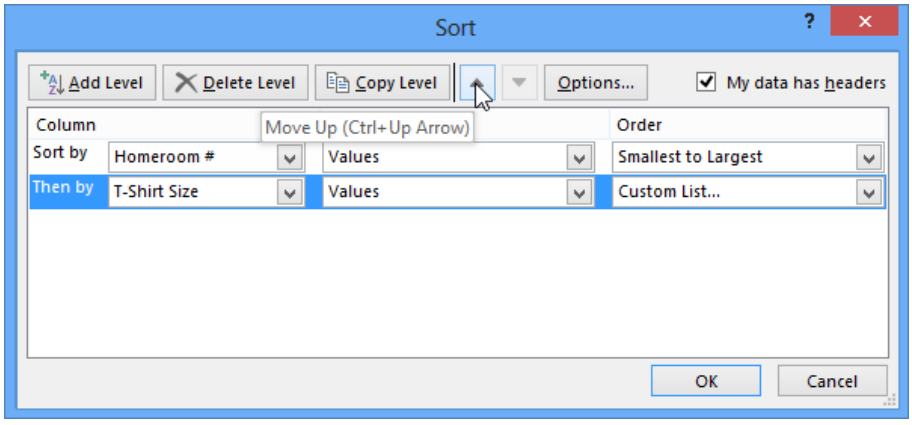


6. The worksheet will be **sorted** according to the selected order. In our example, the homeroom numbers are sorted numerically. Within each homeroom, students are sorted alphabetically by last name.



	A	B	C	D	E	F
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Method	
2	105	Nathan	Albee	Medium	Check	
3	105	Christiana	Chen	Medium	Cash	
4	105	Sidney	Kelly	Medium	Check Bounced	
5	105	Derek	MacDonald	Large	Cash	
6	105	Melissa	White	Small	Debit Card	
7	105	Esther	Yaron	Small	Check	
8	110	Kris	Ackerman	Large	Money Order	
9	110	Matt	Benson	Medium	Money Order	
10	110	Gabriel	Del Toro	Medium	Cash	

If you need to change the order of a multilevel sort, it's easy to control which column is sorted first. Simply select the desired **column**, then click the **Move Up** or **Move Down** arrow to adjust its priority.



Chapter- 16 Filtering Data

Introduction

If your worksheet contains a lot of content, it can be difficult to find information quickly. **Filters** can be used to **narrow down** the data in your worksheet, allowing you to view only the information you need.

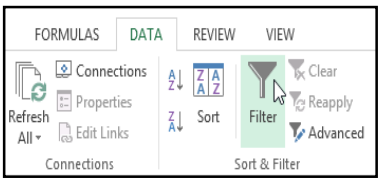
To filter data:

In our example, we'll apply a filter to an equipment log worksheet to display only the laptops and projectors that are available for checkout.

	A	B	C	D	E	F
1	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
2	3000	Camera	Saris Lumina Digital Camera	12-May-13	15-May-13	Shannon Nguyen
3	3005	Camera	Saris Zoom Z-60 Digital Camera	27-Jul-13	06-Aug-13	Sela Shepard
4	3070	Camera	Omega PixL Digital Camcorder	06-Oct-13		Min Seung
5	1021	Laptop	15" EDI SmartPad L200-3	15-Sep-13	01-Oct-13	Sofie Ragnar
6	1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13	16-Aug-13	Hank Sorenson
7	1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
8	1025	Laptop	15" EDI SmartPad L200-4X	26-Sep-13	04-Oct-13	Min Seung
9	1031	Laptop	17" Saris X-10 Laptop	04-Oct-13		Nick Ortiz
10	1032	Laptop	17" Saris X-10 Laptop	19-Sep-13		Stanley Geyer
11	1033	Laptop	17" Saris X-10 Laptop	24-Sep-13	26-Sep-13	George D'Agosta

1. In order for filtering to work correctly, your worksheet should include a **header row**, which is used to identify the name of each column. In our example, our worksheet is organized into different columns identified by the header cells in row 1: **ID#**, **Type**, **Equipment Detail**, and so on.

2. Select the **Data** tab, then click the **Filter** command.



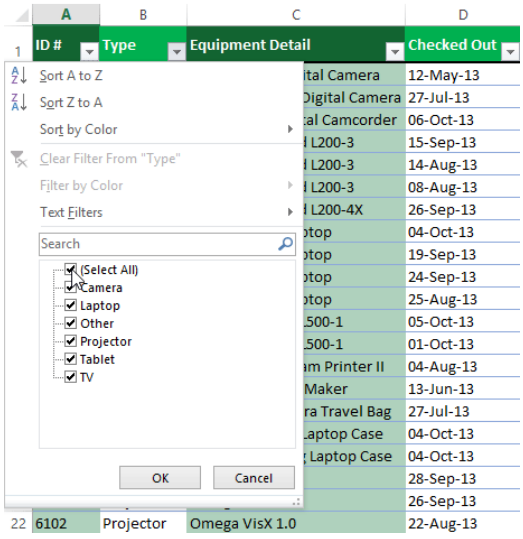
3. A **drop-down arrow** will appear in the header cell for each column.

4. Click the **drop-down arrow** for the column you want to filter. In our example, we will filter column **B** to view only certain types of equipment.

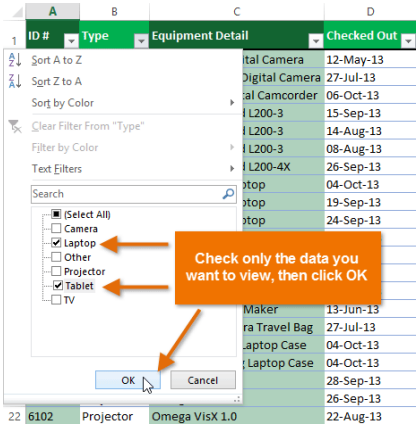
	A	B	C	D	E	F
1	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
2	3000	Camera	Saris Lumina Digital Camera	12-May-13	15-May-13	Shannon Nguyen
3	3005	Camera	n Z-60 Digital Camera	27-Jul-13	06-Aug-13	Sela Shepard
4	3070	Camera	Omega PixL Digital Camcorder	06-Oct-13		Min Seung
5	1021	Laptop	15" EDI SmartPad L200-3	15-Sep-13	01-Oct-13	Sofie Ragnar
6	1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13	16-Aug-13	Hank Sorenson
7	1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
8	1025	Laptop	15" EDI SmartPad L200-4X	26-Sep-13	04-Oct-13	Min Seung
9	1031	Laptop	17" Saris X-10 Laptop	04-Oct-13		Nick Ortiz
10	1032	Laptop	17" Saris X-10 Laptop	19-Sep-13		Stanley Geyer
11	1033	Laptop	17" Saris X-10 Laptop	24-Sep-13	26-Sep-13	George D'Agosta

5. The **Filter menu** will appear.

6. **Uncheck** the box next to **Select All** to quickly deselect all data.



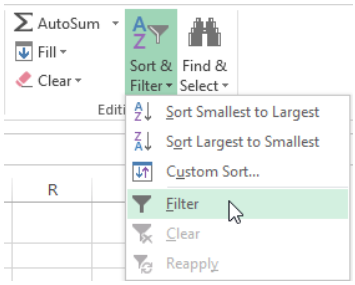
7. **Check** the boxes next to the data you want to filter, then click **OK**. In this example, we will check **Laptop** and **Tablet** to view only those types of equipment.



8. The data will be **filtered**, temporarily hiding any content that doesn't match the criteria. In our example, only laptops and tablets are visible.

	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
5	1021	Laptop	15" EDI SmartPad L200-3	15-Sep-13	01-Oct-13	Sofie Ragnar
6	1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13	16-Aug-13	Hank Sorenson
7	1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
8	1025	Laptop	15" EDI SmartPad L200-4X	26-Sep-13	04-Oct-13	Min Seung
9	1031	Laptop	17" Saris X-10 Laptop	04-Oct-13		Nick Ortiz
10	1032	Laptop	17" Saris X-10 Laptop	19-Sep-13		Stanley Geyer
11	1033	Laptop	17" Saris X-10 Laptop	24-Sep-13	26-Sep-13	George D'Agosta
12	1034	Laptop	17" Saris X-10 Laptop	25-Aug-13	27-Aug-13	Jay Peralta
26	1011	Tablet	Saris SlimTab Pro	04-Aug-13		Jay Peralta
27	1012	Tablet	Saris SlimTab Pro	29-Sep-13		August Zorn

Filtering options can also be accessed from the **Sort & Filter** command on the **Home** tab.



To apply multiple filters:

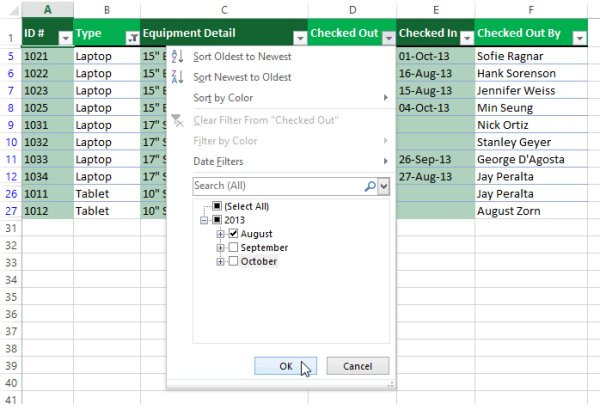
Filters are **cumulative**, which means you can apply **multiple filters** to help narrow down your results. In this example, we've already filtered our worksheet to show laptops and projectors, and we'd like to narrow it down further to only show laptops and projectors that were checked out in August.

1. Click the **drop-down arrow** for the column you want to filter. In this example, we will add a filter to column **D** to view information by date.

	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
5	1021	Laptop	15" EDI SmartPad L200-3	15-Sep-13		Sofie Ragnar
6	1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13		Hank Sorenson
7	1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
8	1025	Laptop	15" EDI SmartPad L200-4X	26-Sep-13	04-Oct-13	Min Seung
9	1031	Laptop	17" Saris X-10 Laptop	04-Oct-13		Nick Ortiz
10	1032	Laptop	17" Saris X-10 Laptop	19-Sep-13		Stanley Geyer
11	1033	Laptop	17" Saris X-10 Laptop	24-Sep-13	26-Sep-13	George D'Agosta
12	1034	Laptop	17" Saris X-10 Laptop	25-Aug-13	27-Aug-13	Jay Peralta
26	1011	Tablet	Saris SlimTab Pro	04-Aug-13		Jay Peralta
27	1012	Tablet	Saris SlimTab Pro	29-Sep-13		August Zorn

Checked Out: (Showing All)

2. The **Filter menu** will appear.
3. **Check** or **uncheck** the boxes depending on the data you want to filter, then click **OK**. In our example, we'll uncheck everything except for **August**.



4. The new filter will be applied. In our example, the worksheet is now filtered to show only laptops and tablets that were checked out in August.

	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
6	1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13	16-Aug-13	Hank Sorenson
7	1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
12	1034	Laptop	17" Saris X-10 Laptop	25-Aug-13	27-Aug-13	Jay Peralta
26	1011	Tablet	Saris SlimTab Pro	04-Aug-13		Jay Peralta

To clear a filter:

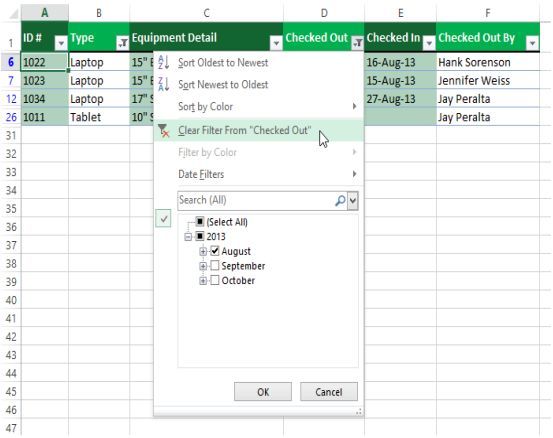
After applying a filter, you may want to remove—or **clear**—it from your worksheet so you'll be able to filter content in different ways.

1. Click the **drop-down arrow** for the filter you want to clear. In our example, we'll clear the filter in column **D**.

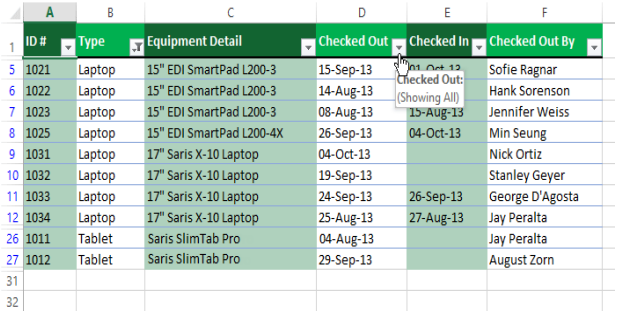
	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
6	1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13		Hank Sorenson
7	1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13		Jennifer Weiss
12	1034	Laptop	17" Saris X-10 Laptop	25-Aug-13	27-Aug-13	Jay Peralta
26	1011	Tablet	Saris SlimTab Pro	04-Aug-13		Jay Peralta

Checked Out: Equals "August 2013"

2. The **Filter menu** will appear.
3. Choose **Clear Filter From [COLUMN NAME]** from the Filter menu. In our example, we'll select **Clear Filter From "Checked Out"**.

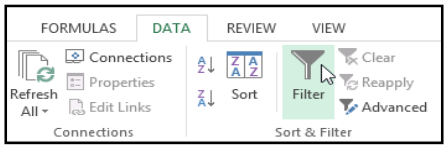


4. The filter will be cleared from the column. The previously hidden data will be displayed.



ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
1021	Laptop	15" EDI SmartPad L200-3	15-Sep-13		Sofie Ragnar
1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13		Hank Sorenson
1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
1025	Laptop	15" EDI SmartPad L200-4X	26-Sep-13	04-Oct-13	Min Seung
1031	Laptop	17" Saris X-10 Laptop	04-Oct-13		Nick Ortiz
1032	Laptop	17" Saris X-10 Laptop	19-Sep-13		Stanley Geyer
1033	Laptop	17" Saris X-10 Laptop	24-Sep-13	26-Sep-13	George D'Agosta
1034	Laptop	17" Saris X-10 Laptop	25-Aug-13	27-Aug-13	Jay Peralta
1011	Tablet	Saris SlimTab Pro	04-Aug-13		Jay Peralta
1012	Tablet	Saris SlimTab Pro	29-Sep-13		August Zorn

To remove all filters from your worksheet, click the **Filter** command on the **Data** tab.



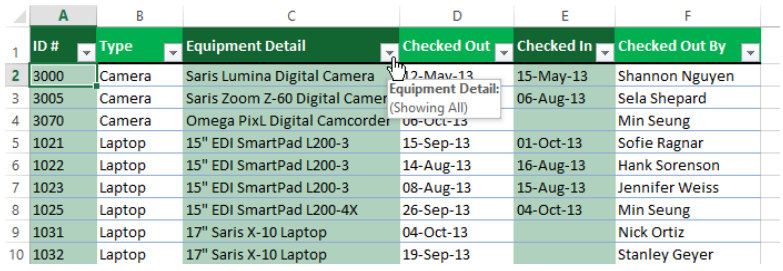
Advanced filtering

If you need to filter for something specific, basic filtering may not give you enough options. Fortunately, Excel includes many **advanced filtering tools**, including **search**, **text**, **date**, and **number filtering**, which can narrow your results to help find exactly what you need.

To filter with search:

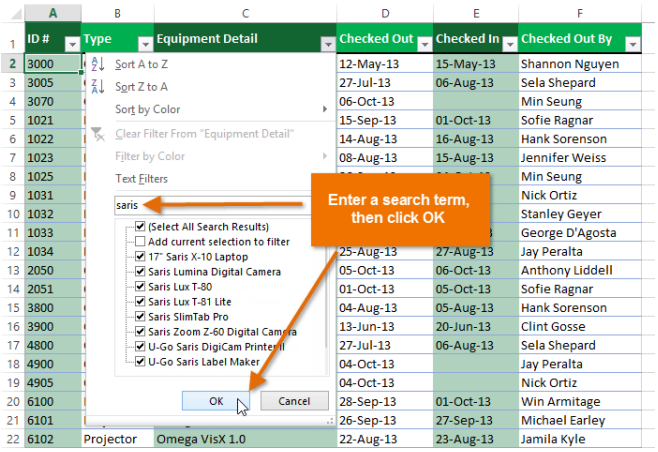
Excel allows you to **search** for data that contains an exact phrase, number, date, and more. In our example, we'll use this feature to show only **Saris** brand products in our equipment log.

1. Select the **Data** tab, then click the **Filter** command. A **drop-down arrow** will appear in the header cell for each column. Note: If you've already added filters to your worksheet, you can skip this step.
2. Click the **drop-down arrow** for the column you want to filter. In our example, we'll filter column **C**.



ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
3000	Camera	Saris Lumina Digital Camera	12-May-13	15-May-13	Shannon Nguyen
3005	Camera	Saris Zoom Z-60 Digital Camer		06-Aug-13	Sela Shepard
3070	Camera	Omega PixL Digital Camcorder	06-Oct-13		Min Seung
1021	Laptop	15" EDI SmartPad L200-3	15-Sep-13	01-Oct-13	Sofie Ragnar
1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13	16-Aug-13	Hank Sorenson
1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
1025	Laptop	15" EDI SmartPad L200-4X	26-Sep-13	04-Oct-13	Min Seung
1031	Laptop	17" Saris X-10 Laptop	04-Oct-13		Nick Ortiz
1032	Laptop	17" Saris X-10 Laptop	19-Sep-13		Stanley Geyer

3. The **Filter menu** will appear. Enter a **search term** into the **search box**. Search results will appear automatically below the **Text Filters** field as you type. In our example, we'll type **saris** to find all Saris brand equipment.
4. When you're done, click **OK**.



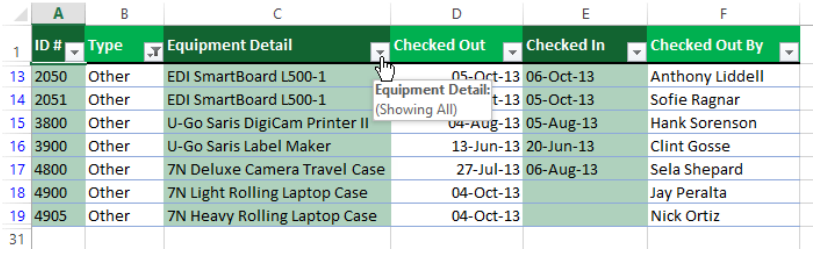
5. The worksheet will be **filtered** according to your search term. In our example, the worksheet is now filtered to show only Saris brand equipment.

ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
3000	Camera	Saris Lumina Digital Camera	12-May-13	15-May-13	Shannon Nguyen
3005	Camera	Saris Zoom Z-60 Digital Camera	27-Jul-13	06-Aug-13	Sela Shepard
1031	Laptop	17" Saris X-10 Laptop	04-Oct-13		Nick Ortiz
1032	Laptop	17" Saris X-10 Laptop	19-Sep-13		Stanley Geyer
1033	Laptop	17" Saris X-10 Laptop	24-Sep-13	26-Sep-13	George D'Agosta
1034	Laptop	17" Saris X-10 Laptop	25-Aug-13	27-Aug-13	Jay Peralta
3800	Other	U-Go Saris DigiCam Printer II	04-Aug-13	05-Aug-13	Hank Sorenson
3900	Other	U-Go Saris Label Maker	13-Jun-13	20-Jun-13	Clint Gosse
6200	Projector	Saris Lux T-80	01-Sep-13	04-Sep-13	Jolie Chaturvedi
6301	Projector	Saris Lux T-81 Lite	10-Sep-13		Marques Herndon
6302	Projector	Saris Lux T-81 Lite	08-Sep-13	15-Sep-13	Dean Sorenson
1011	Tablet	Saris SlimTab Pro	04-Aug-13		Jay Peralta
1012	Tablet	Saris SlimTab Pro	29-Sep-13		August Zorn

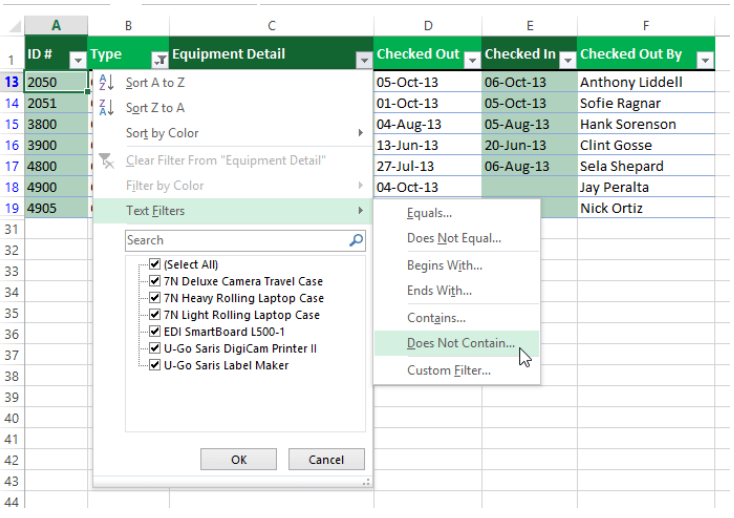
To use advanced text filters:

Advanced text filters can be used to display more specific information, such as cells that contain a certain number of characters, or data that excludes a specific word or number. In our example, we've already filtered our worksheet to only show items with **Other** in the Type column, but we'd like to exclude any item containing the word **case**.

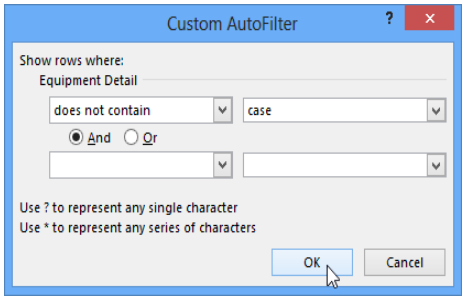
1. Select the **Data** tab, then click the **Filter** command. A **drop-down arrow** will appear in the header cell for each column. Note: If you've already added filters to your worksheet, you can skip this step.
2. Click the **drop-down arrow** for the column you want to filter. In our example, we'll filter column **C**.



3. The **Filter menu** will appear. Hover the mouse over **Text Filters**, then select the desired text filter from the drop-down menu. In our example, we'll choose **Does Not Contain...** to view data that does not contain specific text.



4. The **Custom AutoFilter** dialog box will appear. Enter the **desired text** to the right of the filter, then click **OK**. In our example, we'll type **case** to exclude any items containing this word.



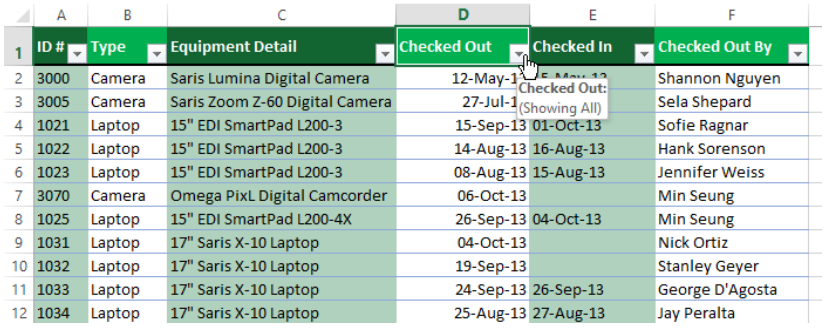
5. The data will be filtered by the selected text filter. In our example, our worksheet now displays items in the **Other** category that do not contain the word **case**.

ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
2050	Other	EDI SmartBoard L500-1	05-Oct-13	06-Oct-13	Anthony Liddell
2051	Other	EDI SmartBoard L500-1	01-Oct-13	05-Oct-13	Sofie Ragnar
3800	Other	U-Go Saris DigiCam Printer II	04-Aug-13	05-Aug-13	Hank Sorenson
3900	Other	U-Go Saris Label Maker	13-Jun-13	20-Jun-13	Clint Gosse

To use advanced date filters:

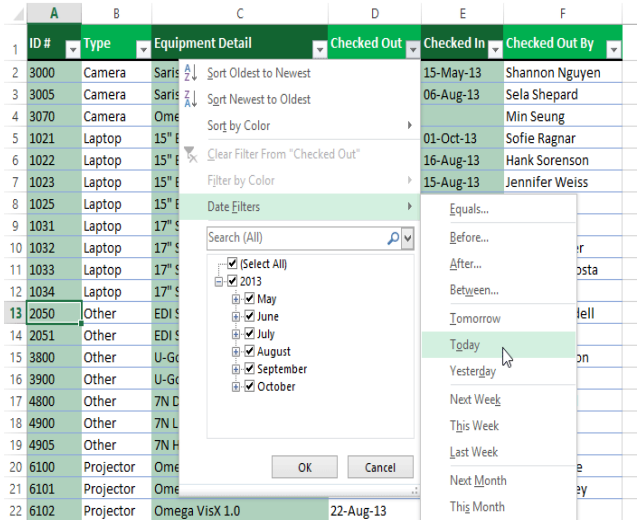
Advanced date filters can be used to view information from a certain time period, such as last year, next quarter, or between two dates. In this example, we will use advanced date filters to view only equipment that has been checked out today.

1. Select the **Data** tab, then click the **Filter** command. A **drop-down arrow** will appear in the header cell for each column. Note: If you've already added filters to your worksheet, you can skip this step.
2. Click the **drop-down arrow** for the column you want to filter. In our example, we will filter column **D** to view only a certain range of dates.

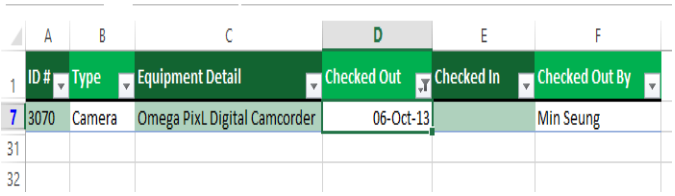


ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
3000	Camera	Saris Lumina Digital Camera	12-May-13		Shannon Nguyen
3005	Camera	Saris Zoom Z-60 Digital Camera	27-Jul-13		Sela Shepard
1021	Laptop	15" EDI SmartPad L200-3	15-Sep-13	01-Oct-13	Sofie Ragnar
1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13	16-Aug-13	Hank Sorenson
1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
3070	Camera	Omega PixL Digital Camcorder	06-Oct-13		Min Seung
1025	Laptop	15" EDI SmartPad L200-4X	26-Sep-13	04-Oct-13	Min Seung
1031	Laptop	17" Saris X-10 Laptop	04-Oct-13		Nick Ortiz
1032	Laptop	17" Saris X-10 Laptop	19-Sep-13		Stanley Geyer
1033	Laptop	17" Saris X-10 Laptop	24-Sep-13	26-Sep-13	George D'Agosta
1034	Laptop	17" Saris X-10 Laptop	25-Aug-13	27-Aug-13	Jay Peralta

3. The **Filter menu** will appear. Hover the mouse over **Date Filters**, then select the desired date filter from the drop-down menu. In our example, we'll select **Today** to view equipment that has been checked out on today's date.



4. The worksheet will be filtered by the selected date filter. In our example, we can now see which items have been checked out **today**.



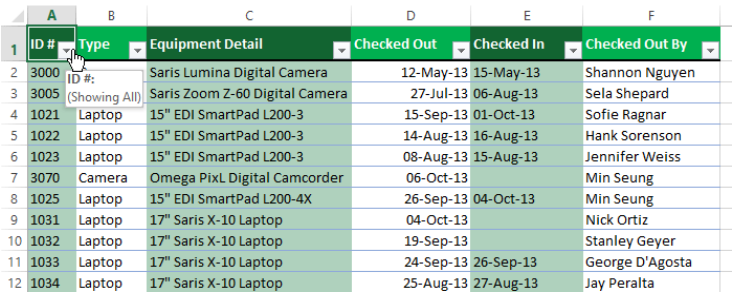
ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
3070	Camera	Omega PixL Digital Camcorder	06-Oct-13		Min Seung

If you're working along with the example file, your results will be different from the images above. If you want, you can change some of the dates so the filter will give more results.

To use advanced number filters:

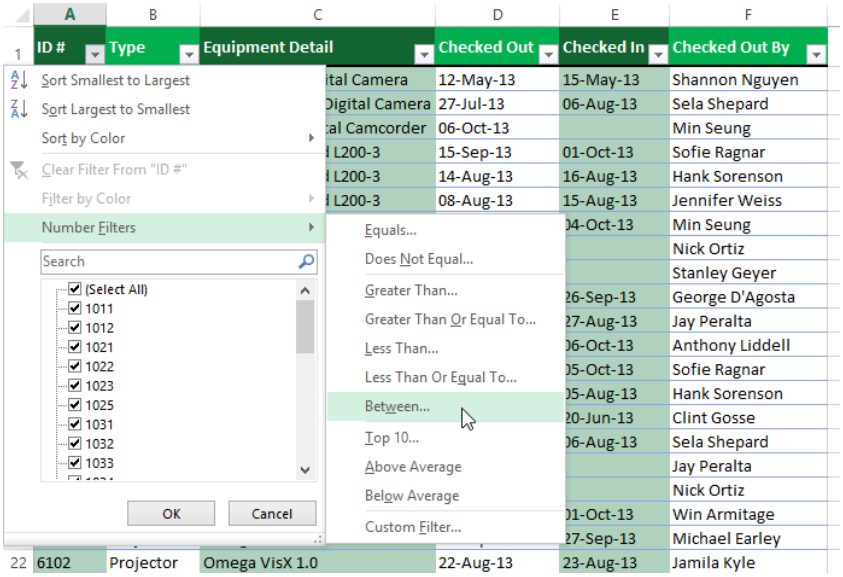
Advanced number filters allow you to manipulate numbered data in different ways. In this example, we will display only certain types of equipment based on the range of ID numbers.

1. Select the **Data** tab on the Ribbon, then click the **Filter** command. A **drop-down arrow** will appear in the header cell for each column. Note: If you've already added filters to your worksheet, you can skip this step.
2. Click the **drop-down arrow** for the column you want to filter. In our example, we'll filter column **A** to view only a certain range of ID numbers.

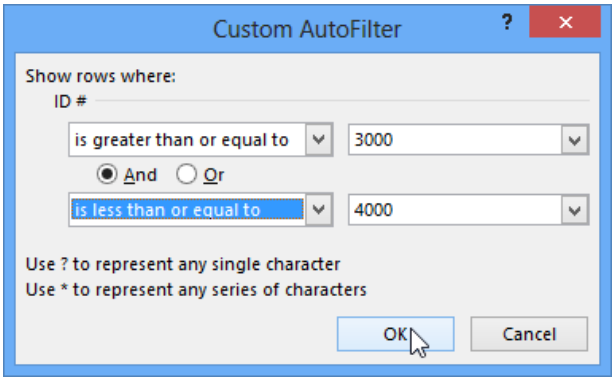


ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
3000	Camera	Saris Lumina Digital Camera	12-May-13	15-May-13	Shannon Nguyen
3005	Camera	Saris Zoom Z-60 Digital Camera	27-Jul-13	06-Aug-13	Sela Shepard
1021	Laptop	15" EDI SmartPad L200-3	15-Sep-13	01-Oct-13	Sofie Ragnar
1022	Laptop	15" EDI SmartPad L200-3	14-Aug-13	16-Aug-13	Hank Sorenson
1023	Laptop	15" EDI SmartPad L200-3	08-Aug-13	15-Aug-13	Jennifer Weiss
3070	Camera	Omega PixL Digital Camcorder	06-Oct-13		Min Seung
1025	Laptop	15" EDI SmartPad L200-4X	26-Sep-13	04-Oct-13	Min Seung
1031	Laptop	17" Saris X-10 Laptop	04-Oct-13		Nick Ortiz
1032	Laptop	17" Saris X-10 Laptop	19-Sep-13		Stanley Geyer
1033	Laptop	17" Saris X-10 Laptop	24-Sep-13	26-Sep-13	George D'Agosta
1034	Laptop	17" Saris X-10 Laptop	25-Aug-13	27-Aug-13	Jay Peralta

3. The **Filter menu** will appear. Hover the mouse over **Number Filters**, then select the desired number filter from the drop-down menu. In our example, we will choose **Between** to view ID numbers between a specific number range.



4. The **Custom AutoFilter** dialog box will appear. Enter the desired **number(s)** to the right of each filter, then click **OK**. In our example, we want to filter for ID numbers greater than or equal to **3000** but less than or equal to **4000**, which will display ID numbers in the 3000-4000 range.



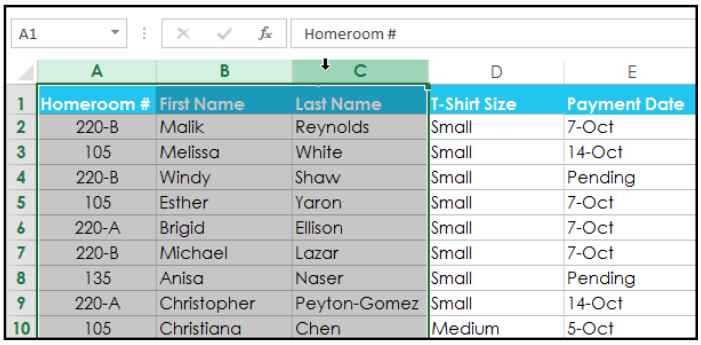
5. The data will be filtered by the selected number filter. In our example, only items with an ID number between **3000** and **4000** are visible.

	A	B	C	D	E	F
1	ID #	Type	Equipment Detail	Checked Out	Checked In	Checked Out By
2	3000	Camera	Saris Lumina Digital Camera	12-May-13	15-May-13	Shannon Nguyen
3	3005	Camera	Saris Zoom Z-60 Digital Camera	27-Jul-13	06-Aug-13	Sela Shepard
4	3070	Camera	Omega PixL Digital Camcorder	06-Oct-13		Min Seung
15	3800	Other	U-Go Saris DigiCam Printer II	04-Aug-13	05-Aug-13	Hank Sorenson
16	3900	Other	U-Go Saris Label Maker	13-Jun-13	20-Jun-13	Clint Gosse
31						

Chapter-17 Groups and Subtotals

Introduction

Worksheets with a lot of content can sometimes feel overwhelming and even become difficult to read. Fortunately, Excel can organize data in **groups**, allowing you to easily **show** and **hide** different sections of your worksheet. You can also summarize different groups using the **Subtotal** command and create an **outline** for your worksheet.

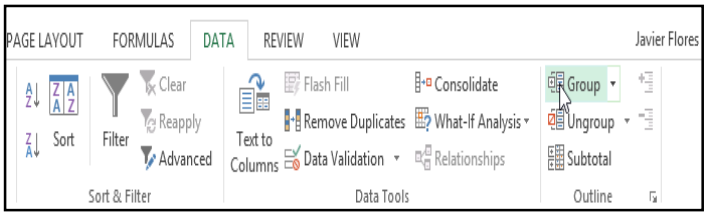


	A	B	C	D	E
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Date
2	220-B	Malik	Reynolds	Small	7-Oct
3	105	Melissa	White	Small	14-Oct
4	220-B	Windy	Shaw	Small	Pending
5	105	Esther	Yaron	Small	7-Oct
6	220-A	Brigid	Ellison	Small	7-Oct
7	220-B	Michael	Lazar	Small	7-Oct
8	135	Anisa	Naser	Small	Pending
9	220-A	Christopher	Peyton-Gomez	Small	14-Oct
10	105	Christiana	Chen	Medium	5-Oct

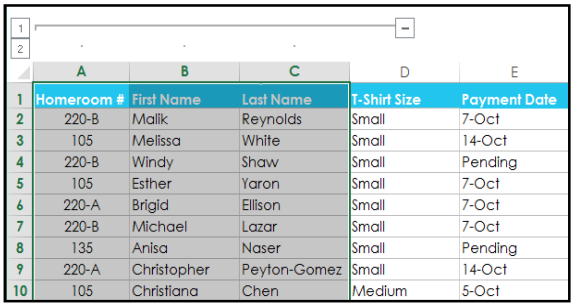
To group rows or columns:

1. Select the **rows** or **columns** you want to group. In this example, we'll select columns **A**, **B**, and **C**.

2. Select the **Data** tab on the **Ribbon**, then click the **Group** command.

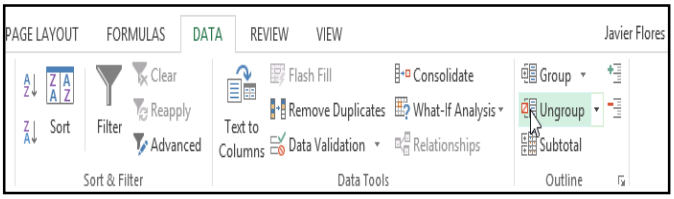


3. The selected rows or columns will be **grouped**. In our example, columns **A**, **B**, and **C** are grouped together.



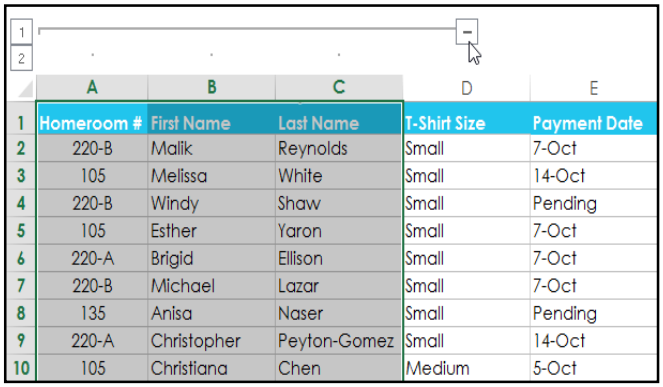
	A	B	C	D	E
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Date
2	220-B	Malik	Reynolds	Small	7-Oct
3	105	Melissa	White	Small	14-Oct
4	220-B	Windy	Shaw	Small	Pending
5	105	Esther	Yaron	Small	7-Oct
6	220-A	Brigid	Ellison	Small	7-Oct
7	220-B	Michael	Lazar	Small	7-Oct
8	135	Anisa	Naser	Small	Pending
9	220-A	Christopher	Peyton-Gomez	Small	14-Oct
10	105	Christiana	Chen	Medium	5-Oct

To **ungroup** data, select the grouped rows or columns, then click the **Ungroup** command.



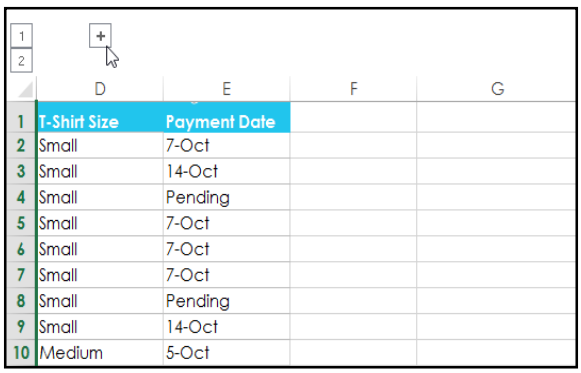
To hide and show groups:

1. To hide a group, click the **Hide Detail** button [−].



	A	B	C	D	E
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Date
2	220-B	Malik	Reynolds	Small	7-Oct
3	105	Melissa	White	Small	14-Oct
4	220-B	Windy	Shaw	Small	Pending
5	105	Esther	Yaron	Small	7-Oct
6	220-A	Brigid	Ellison	Small	7-Oct
7	220-B	Michael	Lazar	Small	7-Oct
8	135	Anisa	Naser	Small	Pending
9	220-A	Christopher	Peyton-Gomez	Small	14-Oct
10	105	Christiana	Chen	Medium	5-Oct

2. The group will be **hidden**. To show a hidden group, click the **Show Detail** button [+].



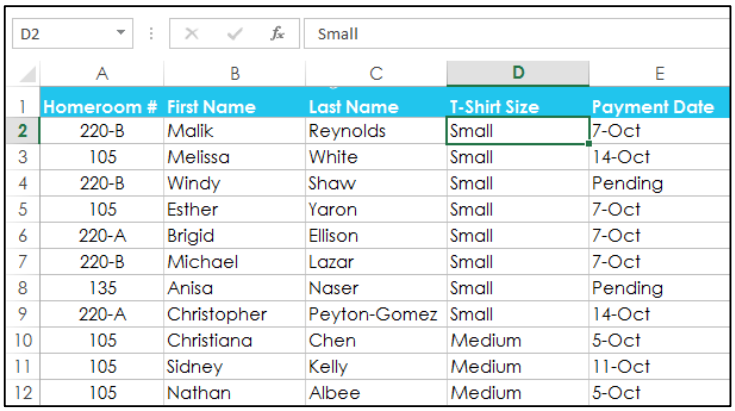
	D	E	F	G
1	T-Shirt Size	Payment Date		
2	Small	7-Oct		
3	Small	14-Oct		
4	Small	Pending		
5	Small	7-Oct		
6	Small	7-Oct		
7	Small	7-Oct		
8	Small	Pending		
9	Small	14-Oct		
10	Medium	5-Oct		

Creating subtotals

The **Subtotal** command allows you to automatically **create groups** and use common functions like SUM, COUNT, and AVERAGE to help **summarize** your data. For example, the **Subtotal** command could help to calculate the cost of office supplies by type from a large inventory order. It will create a hierarchy of groups, known as an **outline**, to help organize your worksheet.

To create a subtotal:

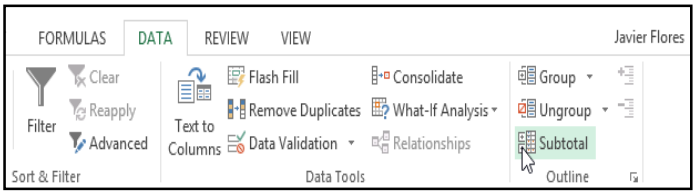
In our example, we will use the Subtotal command with a T-shirt order form to determine how many T-shirts were ordered in each size (Small, Medium, Large, and X-Large). This will create an **outline** for our worksheet with a **group** for each T-shirt size and then **count** the total number of shirts in each group.



	A	B	C	D	E
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Date
2	220-B	Malik	Reynolds	Small	7-Oct
3	105	Melissa	White	Small	14-Oct
4	220-B	Windy	Shaw	Small	Pending
5	105	Esther	Yaron	Small	7-Oct
6	220-A	Brigid	Ellison	Small	7-Oct
7	220-B	Michael	Lazar	Small	7-Oct
8	135	Anisa	Naser	Small	Pending
9	220-A	Christopher	Peyton-Gomez	Small	14-Oct
10	105	Christiana	Chen	Medium	5-Oct
11	105	Sidney	Kelly	Medium	11-Oct
12	105	Nathan	Albee	Medium	5-Oct

1. First, **sort** your worksheet by the data you want to subtotal. In this example, we will create a subtotal for each T-shirt size, so our worksheet has been sorted by T-shirt size from smallest to largest.

2. Select the **Data** tab, then click the **Subtotal** command.

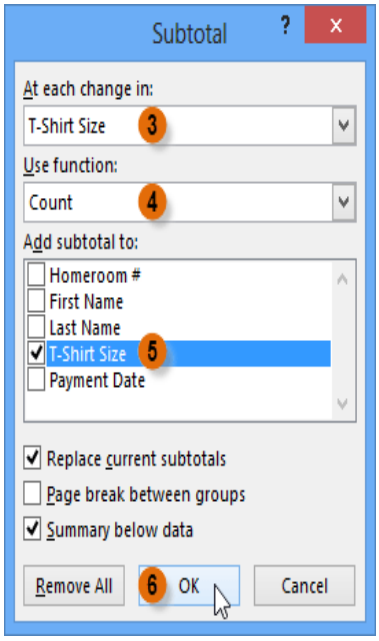


3. The **Subtotal** dialog box will appear. Click the drop-down arrow for the **At each change in:** field to select the **column** you want to subtotal. In our example, we'll select **T-Shirt Size**.

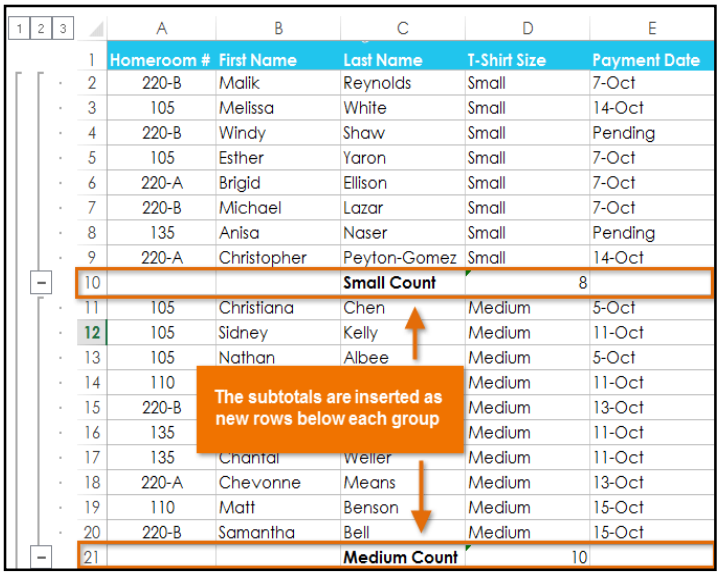
4. Click the drop-down arrow for the **Use function:** field to select the **function** you want to use. In our example, we'll select **COUNT** to count the number of shirts ordered in each size.

5. In the **Add subtotal to:** field, select the **column** where you want the **calculated subtotal** to appear. In our example, we'll select **T-Shirt Size**.

6. When you're satisfied with your selections, click **OK**.



7. The worksheet will be **outlined** into **groups**, and the **subtotal** will be listed below each group. In our example, the data is now grouped by T-shirt size, and the number of shirts ordered in that size appears below each group.

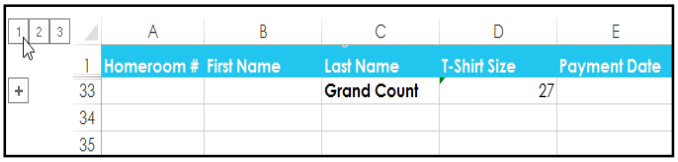


	A	B	C	D	E
1	Homeroom #	First Name	Last Name	T-Shirt Size	Payment Date
2	220-B	Malik	Reynolds	Small	7-Oct
3	105	Melissa	White	Small	14-Oct
4	220-B	Windy	Shaw	Small	Pending
5	105	Esther	Yaron	Small	7-Oct
6	220-A	Brigid	Ellison	Small	7-Oct
7	220-B	Michael	Lazar	Small	7-Oct
8	135	Anisa	Naser	Small	Pending
9	220-A	Christopher	Peyton-Gomez	Small	14-Oct
10			**Small Count**	8	
11	105	Christiana	Chen	Medium	5-Oct
12	105	Sidney	Kelly	Medium	11-Oct
13	105	Nathan	Albee	Medium	5-Oct
14	110			Medium	11-Oct
15	220-B			Medium	13-Oct
16	135			Medium	11-Oct
17	135	Chantal	Weller	Medium	11-Oct
18	220-A	Chevonne	Means	Medium	13-Oct
19	110	Matt	Benson	Medium	15-Oct
20	220-B	Samantha	Bell	Medium	15-Oct
21			**Medium Count**	10	

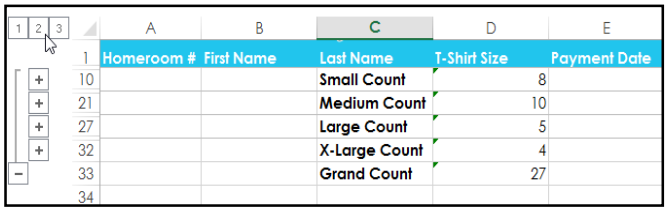
To view groups by level:

When you create subtotals, your worksheet it is divided into different **levels**. You can switch between these levels to quickly control how much information is displayed in the worksheet by clicking the **Level** buttons 1 2 3 to the left of the worksheet. In our example, we'll switch between all three levels in our outline. While this example contains only three levels, Excel can accommodate up to eight.

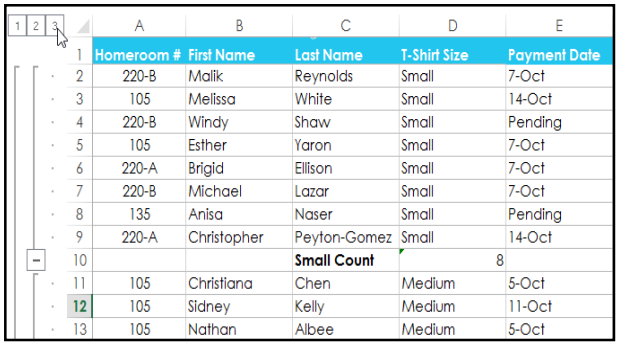
1. Click the **lowest level** to display the least detail. In our example, we'll select **level 1**, which contains only the **grand count**, or total number of T-shirts ordered.



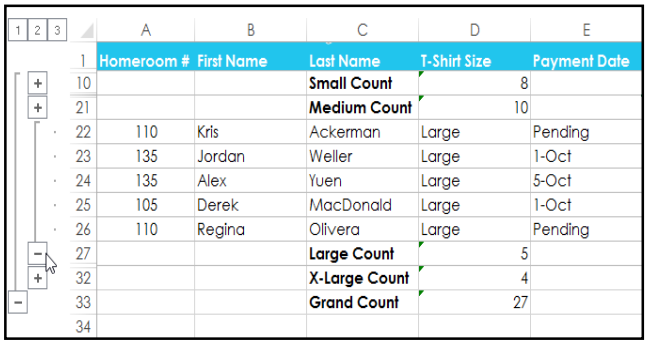
2. Click the **next level** to expand the detail. In our example, we'll select **level 2**, which contains each subtotal row but hides all other data from the worksheet.



3. Click the **highest level** to view and expand all of your worksheet data. In our example, we'll select **level 3**.



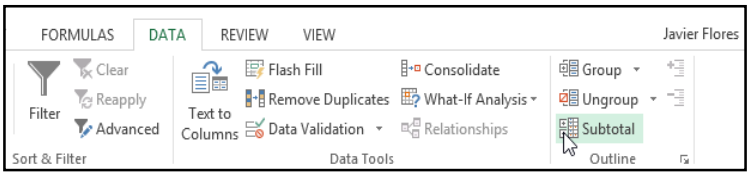
You can also use the **Show** and **Hide Detail** buttons to show and hide the groups within the outline.



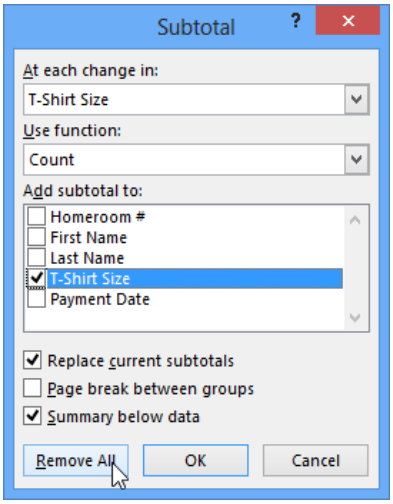
To remove subtotals:

Sometimes you may not want to keep subtotals in your worksheet, especially if you want to reorganize data in different ways. If you no longer want to use subtotaling, you'll need **remove it** from your worksheet.

1. Select the **Data** tab, then click the **Subtotal** command.

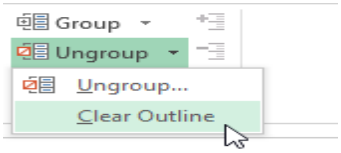


2. The **Subtotal** dialog box will appear. Click **Remove All**.



3. All worksheet data will be **ungrouped**, and the subtotals will be **removed**.

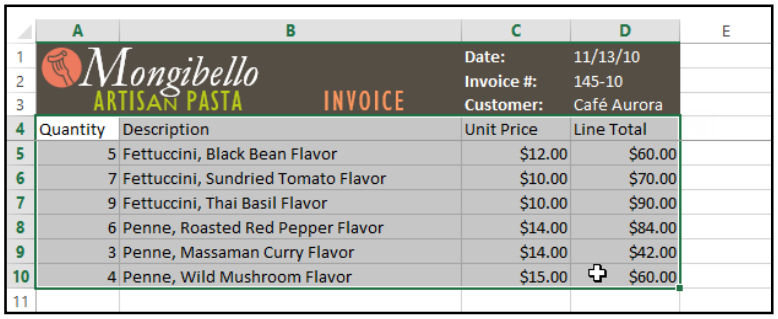
To remove all groups without deleting the subtotals, click the **Ungroup** command drop-down arrow, then choose **Clear Outline**.



Chapter-18 Tables

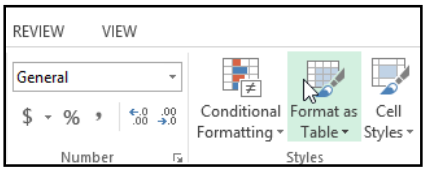
Introduction

Once you've entered information into a worksheet, you may want to format your data as a **table**. Just like regular formatting, tables can improve the **look and feel** of your workbook, but they'll also help to **organize** your content and make your data easier to use. Excel includes several **tools** and **predefined table styles**, allowing you to create tables quickly and easily.

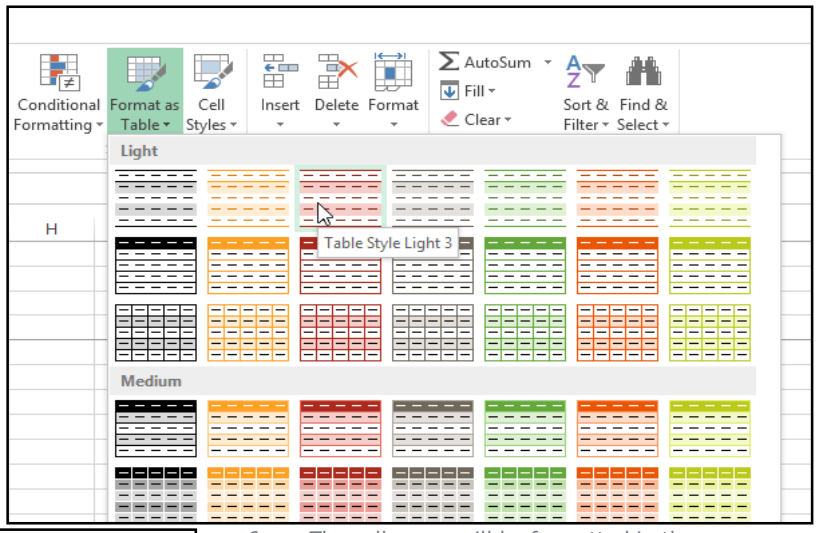


To format data as a table:

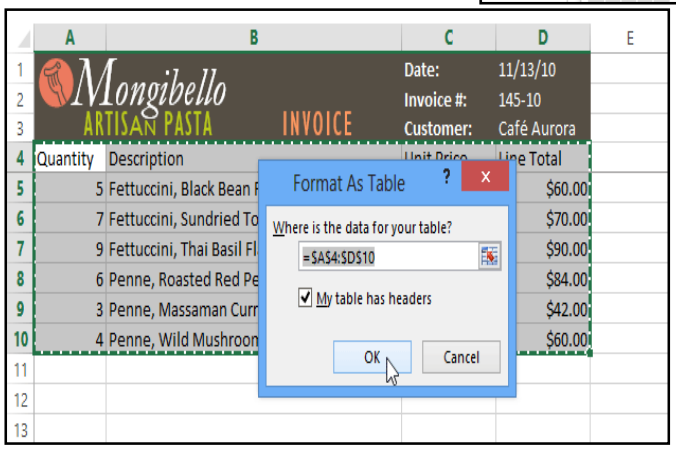
1. Select the **cells** you want to format as a table. In our example, we'll select the cell range **A4:D10**.
2. From the **Home** tab, click the **Format as Table** command in the **Styles** group.



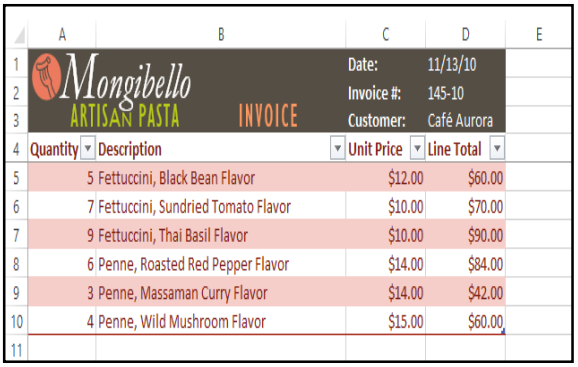
3. Select a **table style** from the drop-down menu.



4. A dialog box will appear, confirming the selected **cell range** for the table.
5. If your table has **headers**, check the box next to **My table has headers**, then click **OK**.



6. The cell range will be formatted in the selected table style.



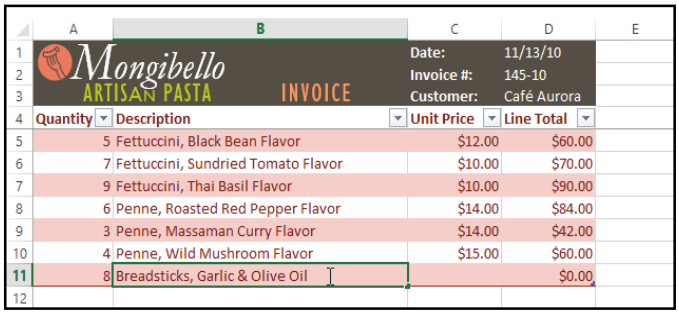
Tables include **filtering** by default. You can filter your data at any time using the **drop-down arrows** in the header cells. To learn more, review our lesson on **Filtering Data**.

Modifying tables

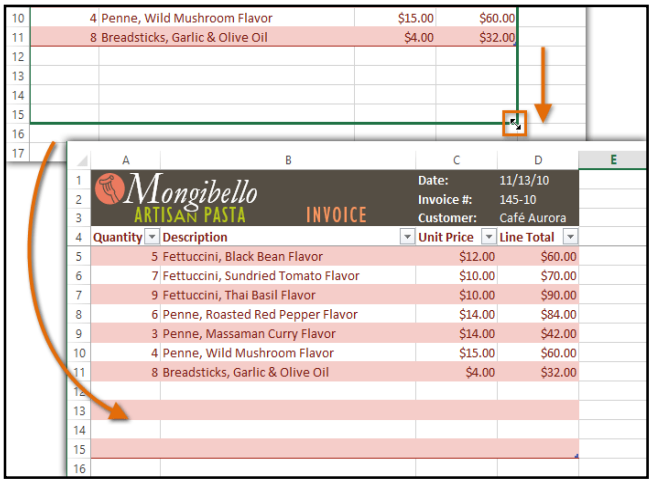
It's easy to modify the look and feel of any table after adding it to a worksheet. Excel includes different options for customizing a table, including **adding rows or columns** and changing the **table style**.

To add rows or columns to a table:

If you need to fit more content in your table, Excel allows you to modify the **table size** by including additional rows and columns. There are two simple ways to change the table size:

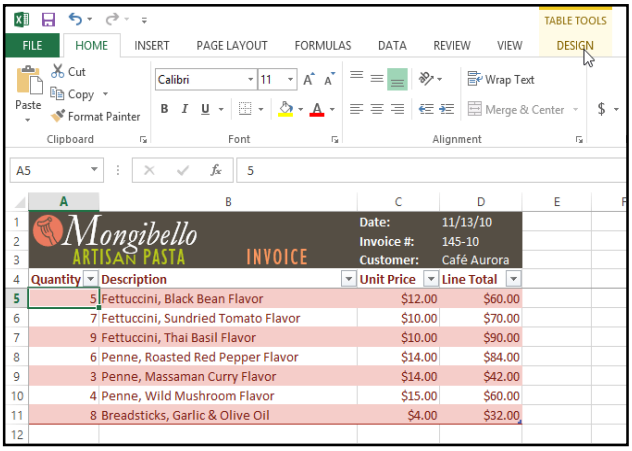


- Begin typing new content after the last row or column in the table. The row or column will be included in the table automatically.
- Click, hold, and drag the **bottom-right corner** of the table to create additional rows or columns.

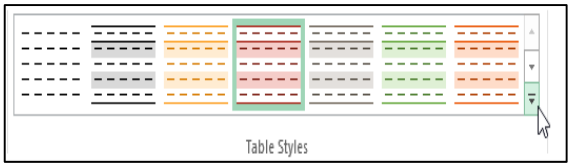


To change the table style:

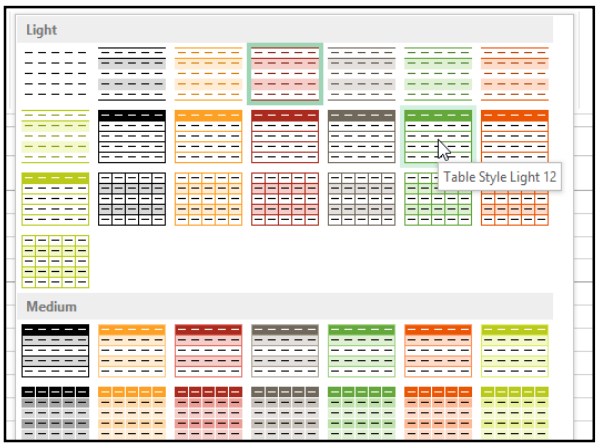
1. Select **any cell** in your table, then click the **Design** tab.



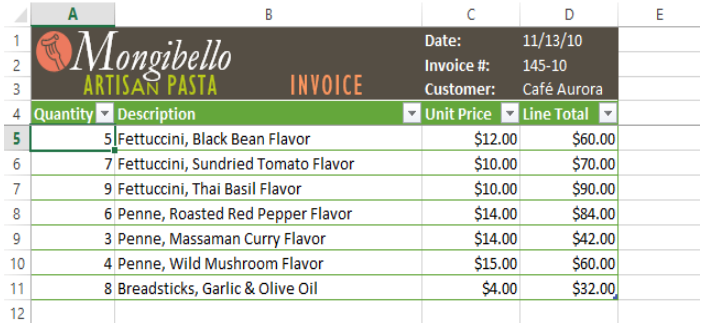
2. Locate the **Table Styles** group, then click the **More** drop-down arrow to see all available table styles.



3. Select the **desired style**.



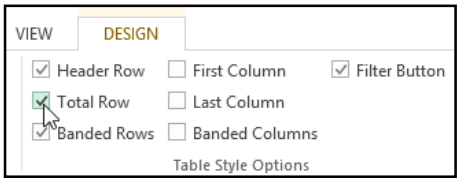
4. The selected **table style** will appear.



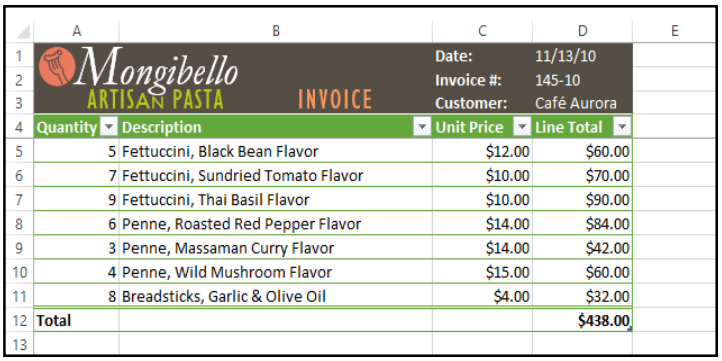
To modify the table style options:

You can turn various options **on** or **off** to change the appearance of any table. There are six options: **Header Row**, **Total Row**, **Banded Rows**, **First Column**, **Last Column**, and **Banded Columns**.

1. Select **any cell** in your table.
2. From the **Design** tab, **check** or **uncheck** the desired options in the **Table Style Options** group. In our example, we'll check **Total Row** to automatically include a **total** for our table.



3. The table style will be modified. In our example, a **new row** has been added to the table with a **formula** that will automatically calculate the total value of the cells in column D.



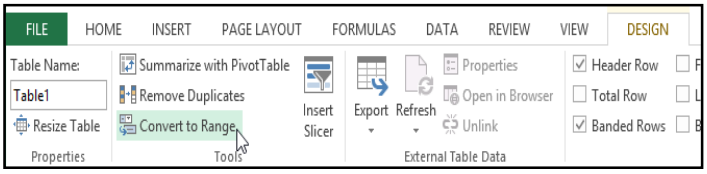
Quantity	Description	Unit Price	Line Total
5	Fettuccini, Black Bean Flavor	$12.00	$60.00
7	Fettuccini, Sundried Tomato Flavor	$10.00	$70.00
9	Fettuccini, Thai Basil Flavor	$10.00	$90.00
6	Penne, Roasted Red Pepper Flavor	$14.00	$84.00
3	Penne, Massaman Curry Flavor	$14.00	$42.00
4	Penne, Wild Mushroom Flavor	$15.00	$60.00
8	Breadsticks, Garlic & Olive Oil	$4.00	$32.00
Total			$438.00

These options can affect your table style in various ways, depending on the type of content in your table. You may need to experiment with a few different options to find the exact style you want.

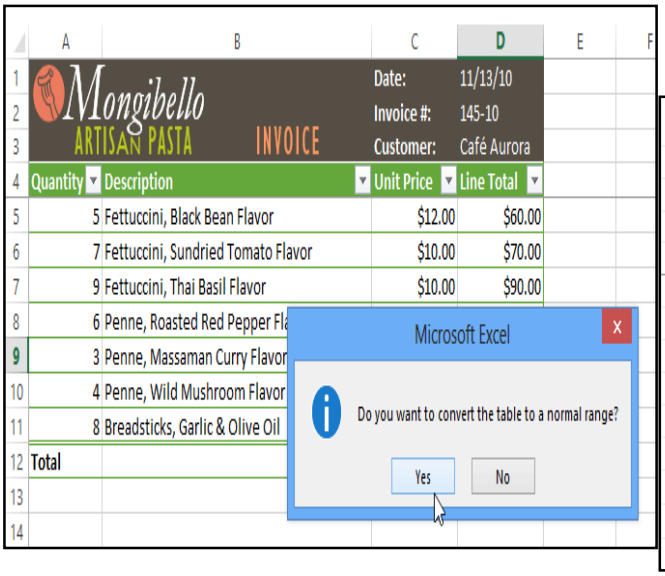
To remove a table:

Sometimes you may not want to use the additional features included with tables, such as the Sort and Filter drop-down arrows. You can **remove** a table from the workbook while still preserving the table's formatting elements, like font and cell color.

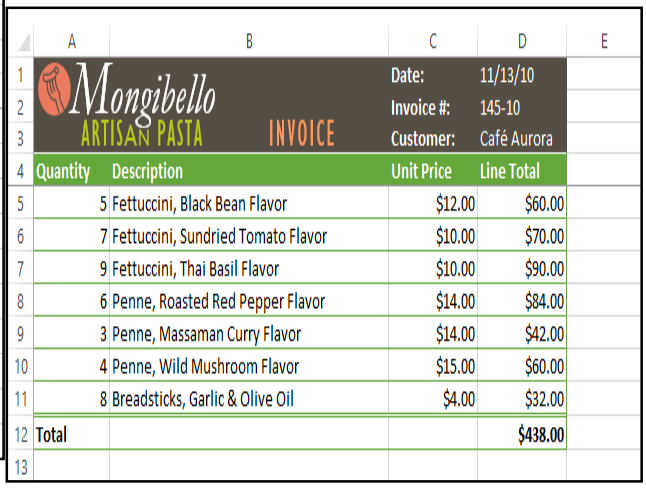
1. Select **any cell** in your table. The **Design** tab will appear.
2. Click the **Convert to Range** command in the **Tools** group.



3. A dialog box will appear. Click **Yes**.



4. The range will no longer be a table, but the cells will retain their data and formatting.



Quantity	Description	Unit Price	Line Total
5	Fettuccini, Black Bean Flavor	$12.00	$60.00
7	Fettuccini, Sundried Tomato Flavor	$10.00	$70.00
9	Fettuccini, Thai Basil Flavor	$10.00	$90.00
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4	Penne, Wild Mushroom Flavor	$15.00	$60.00
8	Breadsticks, Garlic & Olive Oil	$4.00	$32.00
Total			$438.00

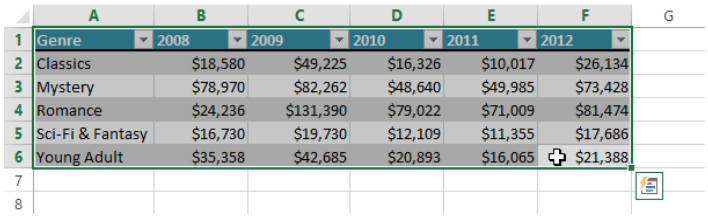
Chapter-19 Charts

Introduction

It can often be difficult to interpret Excel workbooks that contain a lot of data. **Charts** allow you to illustrate your workbook data **graphically,** which makes it easy to visualize **comparisons** and **trends**.

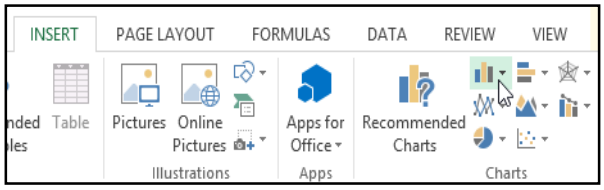
To insert a chart:

1. Select the **cells** you want to chart, including the **column titles** and **row labels**. These cells will be the **source data** for the chart. In our example, we'll select cells A1:F6.

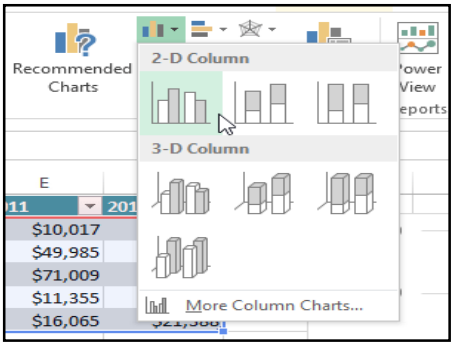


	A	B	C	D	E	F	G
1	Genre	2008	2009	2010	2011	2012	
2	Classics	$18,580	$49,225	$16,326	$10,017	$26,134	
3	Mystery	$78,970	$82,262	$48,640	$49,985	$73,428	
4	Romance	$24,236	$131,390	$79,022	$71,009	$81,474	
5	Sci-Fi & Fantasy	$16,730	$19,730	$12,109	$11,355	$17,686	
6	Young Adult	$35,358	$42,685	$20,893	$16,065	$21,388	
7							
8							

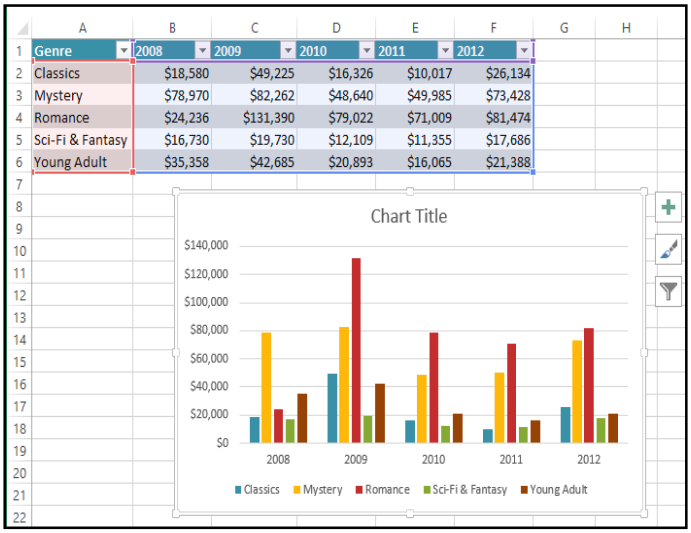
2. From the **Insert** tab, click the desired **Chart** command. In our example, we'll select **Column**.



3. Choose the desired **chart type** from the drop-down menu.



4. The selected chart will be inserted in the worksheet.



If you're not sure which type of chart to use, the **Recommended Charts** command will suggest several different charts based on the source data.

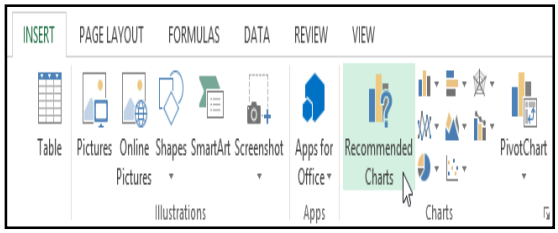
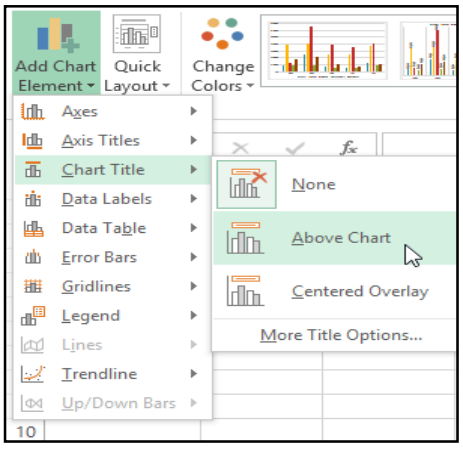


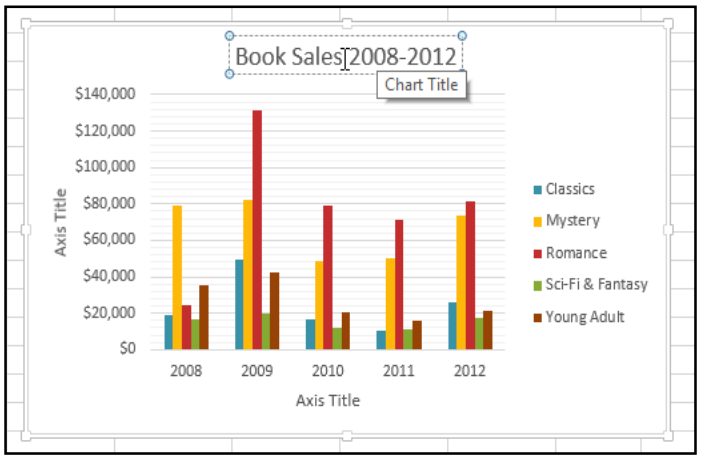
Chart layout and style

After inserting a chart, there are several things you may want to change about the way your data is displayed. It's easy to edit a chart's **layout** and **style** from the **Design** tab.

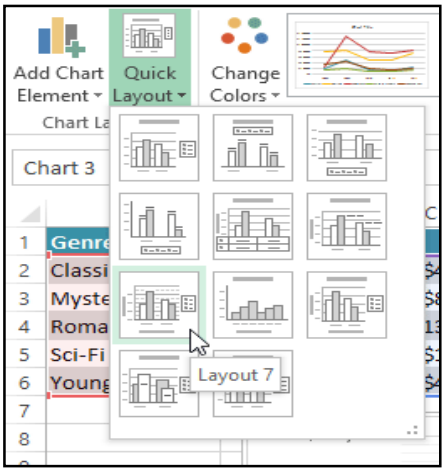
- Excel allows you to add **chart elements**—such as **chart titles**, **legends**, and **data labels**—to make your chart easier to read. To add a chart element, click the **Add Chart Element** command on the **Design** tab, then choose the **desired element** from the drop-down menu.



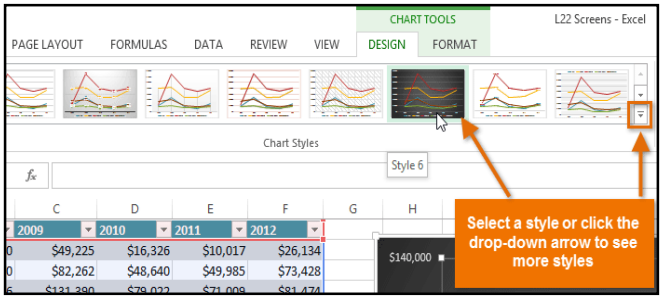
- To **edit** a chart element, like a **chart title,** simply double-click the **placeholder** and begin typing.



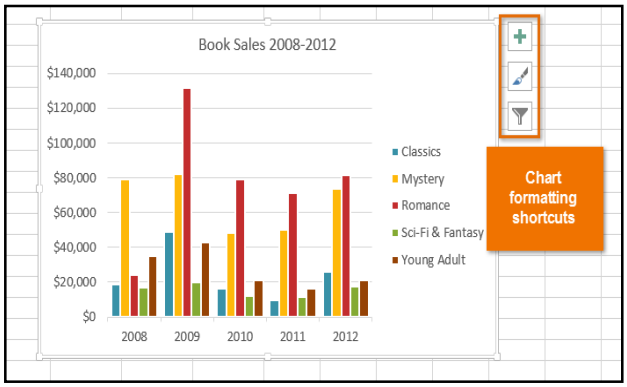
- If you don't want to add chart elements individually, you can use one of Excel's predefined layouts. Simply click the **Quick Layout** command, then choose the **desired layout** from the drop-down menu.



- Excel also includes several different **chart styles**, which allow you to quickly modify the look and feel of your chart. To change the chart style, select the **desired style** from the **Chart styles** group.



You can also use the chart formatting shortcut buttons to quickly **add chart elements**, change the **chart style**, and **filter** the chart data.

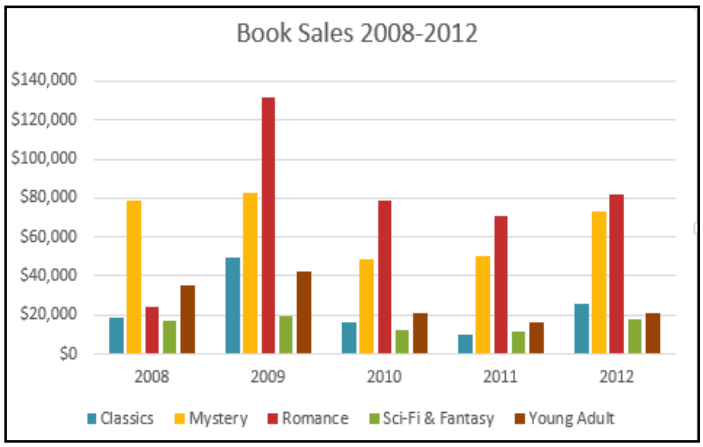


Other chart options

There are many other ways to customize and organize your charts. For example, Excel allows you to **rearrange** a chart's data, change the **chart type**, and even **move** the chart to a different location in the workbook.

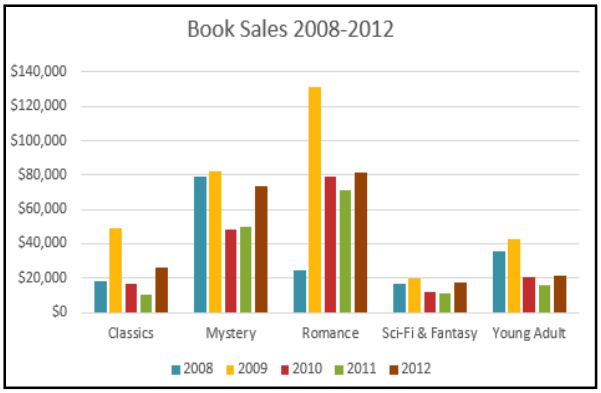
To switch row and column data:

Sometimes you may want to change the way charts **group** your data. For example, in the chart below, the Book Sales data are grouped **by year**, with columns for **each genre**. However, we could switch the rows and columns so the chart will group the data **by genre**, with columns for **each year**. In both cases, the chart contains the same data—it's just organized differently.



1. Select the **chart** you want to modify.
2. From the **Design** tab, select the **Switch Row/Column** command.

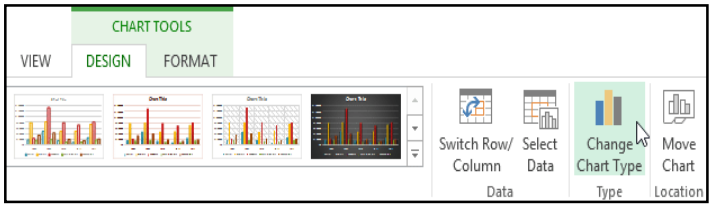
3. The rows and columns will be **switched**. In our example, the data is now grouped by genre, with columns for each year.



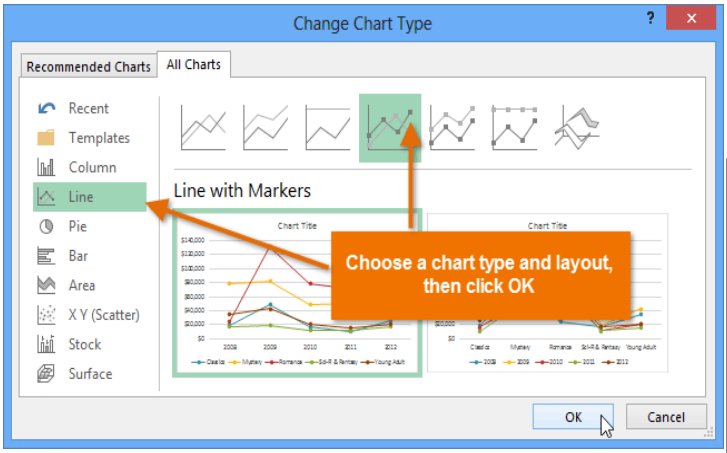
To change the chart type:

If you find that your data isn't well suited to a certain chart, it's easy to switch to a new **chart type**. In our example, we'll change our chart from a **Column** chart to a **Line** chart.

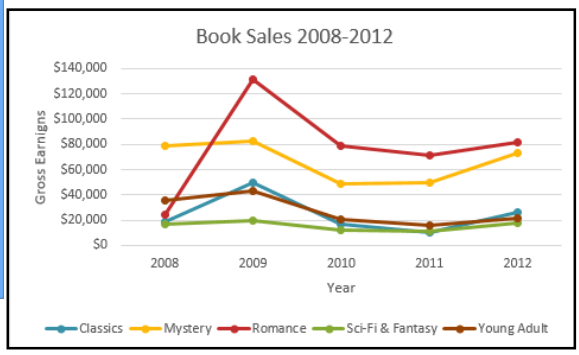
1. From the **Design** tab, click the **Change Chart Type** command.



2. The **Change Chart Type** dialog box will appear. Select a new chart **type** and **layout**, then click **OK**. In our example, we'll choose a **Line** chart.



3. The selected chart type will appear. In our example, the line chart makes it easier to see trends in the sales data over time.

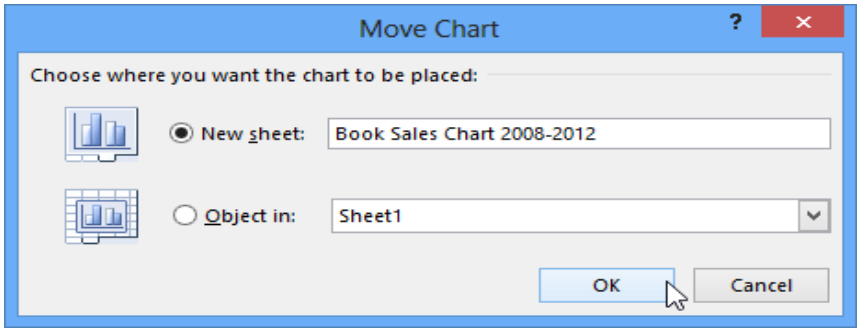


To move a chart:

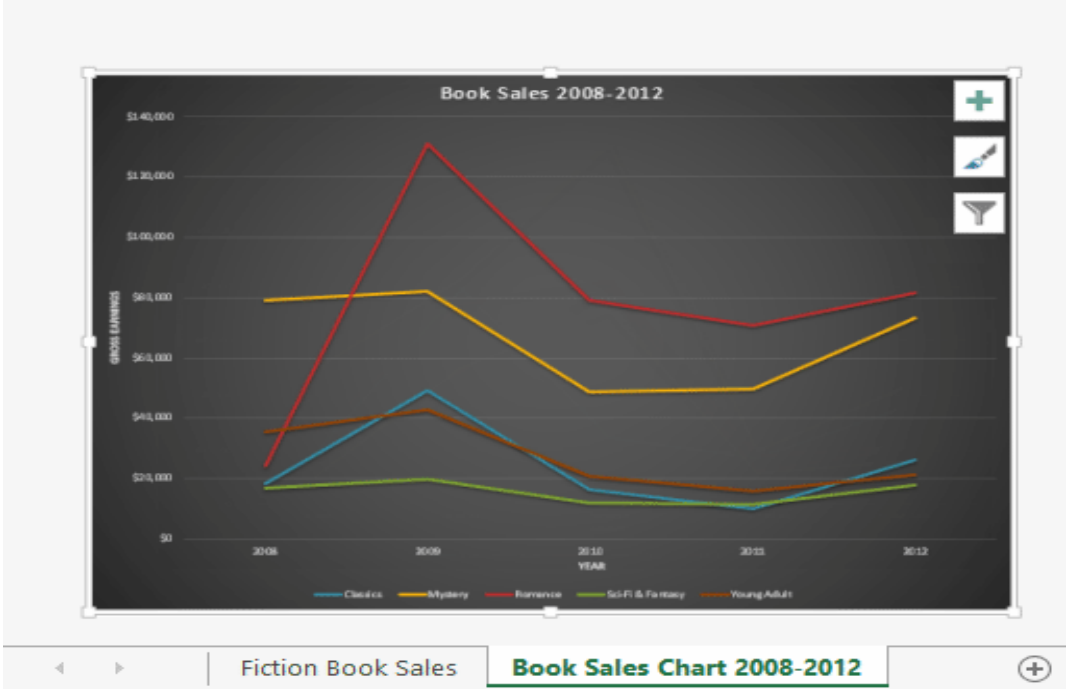
Whenever you insert a new chart, it will appear as an object on the same worksheet that contains its source data. Alternatively, you can **move** the chart to a **new worksheet** to help keep your data organized.

1. Select the **chart** you want to move.
2. Click the **Design** tab, then select the **Move Chart** command.

3. The **Move Chart** dialog box will appear. Select the **desired location** for the chart. In our example, we'll choose to move it to a **New sheet**, which will create a new worksheet.
4. Click **OK**.



5. The chart will appear in the selected location. In our example, the chart now appears on a new worksheet.



Keeping charts up to date

By default, when you add more data to your spreadsheet, the chart may not include the new data. To fix this, you can adjust the **data range**. Simply click the chart, and it will highlight the data range in your spreadsheet. You can then click and drag the **handle** in the lower-right corner to change the data range.

B	C	D	E	F
January	February	March	April	May
$18,580	$49,225	$16,326	$10,017	$26,134
$78,970	$82,262	$48,640	$49,985	$73,428
$24,236	$131,390	$79,022	$71,009	$81,474
$16,730	$19,730	$12,109	$11,355	$17,686
$35,358	$42,685	$20,893	$16,065	$21,388

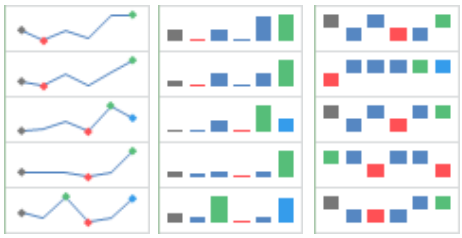
If you frequently add more data to your spreadsheet, it may become tedious to update the data range. Luckily, there is an easier way. Simply format your source data as a **table**, then create a **chart based on that table**. When you add more data below the table, it will automatically be included in both the table and the chart, keeping everything consistent and up to date.

Chapter-20 Sparklines

Introduction

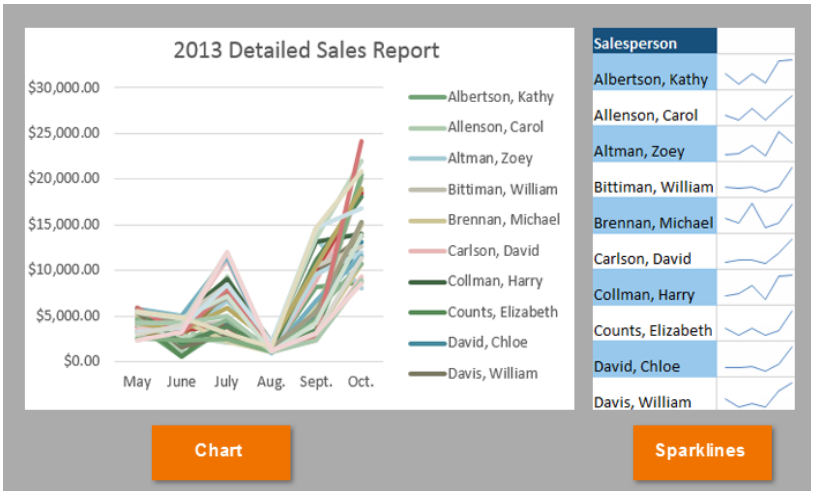
Sometimes you may want to **analyze** and view **trends** in your data without creating an entire chart. **Sparklines** are miniature charts that fit into a **single cell**. Because they're so compact, it's easy to include several sparklines in a workbook.

Types of sparklines



There are three different types of sparklines: **Line**, **Column**, and **Win/Loss**. **Line** and **Column** work the same as line and column charts. **Win/Loss** is similar to **Column**, except it only shows whether each value is **positive** or **negative** instead of how **high** or **low** the values are. All three types can display **markers** at important points, such as the **highest** and **lowest** points, to make them easier to read.

Why use sparklines?



Sparklines have certain advantages over charts. For example, let's say you have 1,000 rows of data. A traditional chart would have 1,000 data series to represent all of the rows, making relevant data difficult to find. But if you placed a sparkline on each row, it will be right next to its **source data**, making it easy to see **relationships** and **trends** for multiple data series at the same time.

In the image below, the chart is extremely cluttered and difficult to follow, but the sparklines allow you to clearly follow each salesperson's data.

Sparklines are ideal for situations when you need a clear overview of the data **at a glance** and when you don't need all of the features of a full chart. On the other hand, charts are ideal for situations when you want to represent the data in **greater detail**, and they are often better for **comparing** different data series.

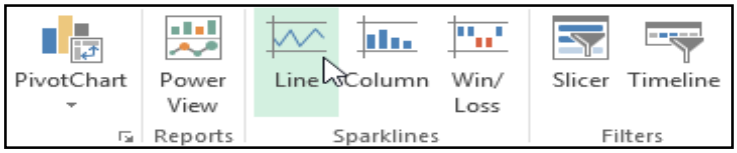
To create sparklines:

Generally, you will have one sparkline for each row, but you can create as many as you want in any location. Just like **formulas**, it's usually easiest to create a **single sparkline** and then use the **fill handle** to create sparklines for the adjacent rows. In our example, we'll create sparklines to help visualize **trends** in sales over time for each salesperson.

	A	B	C	D	E	F	G
1	Salesperson	May	June	July	Aug.	Sept.	Oct.
2	Albertson, Kathy	$3,947.00	$557.00	$3,863.00	$1,117.00	$8,237.00	$8,690.00
3	Allenson, Carol	$4,411.00	$1,042.00	$9,355.00	$1,100.00	$10,185.00	$18,749.00
4	Altman, Zoey	$2,521.00	$3,072.00	$6,702.00	$2,116.00	$13,452.00	$8,046.00
5	Bittiman, William	$4,752.00	$3,755.00	$4,415.00	$1,089.00	$4,404.00	$20,114.00

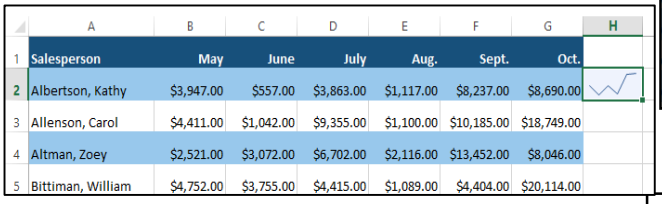
1. Select the **cells** that will serve as the source data for the **first sparkline**. In our example, we'll select the cell range **B2:G2.**

2. Select the **Insert** tab, then choose the desired **Sparkline** from the **Sparklines** group. In our example, we'll choose **Line**.

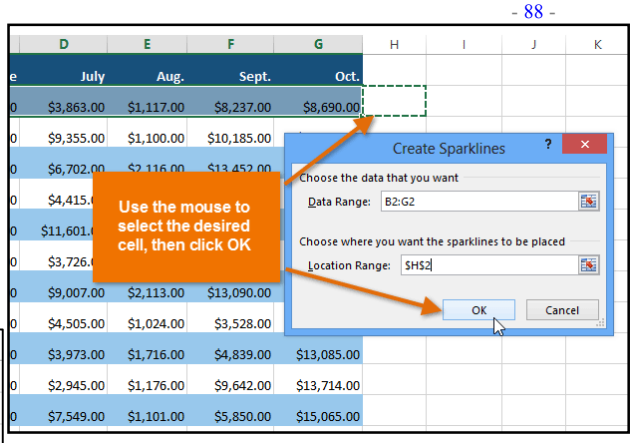


3. The **Create Sparklines** dialog box will appear. Use the mouse to select the cell where the sparkline will appear, then click **OK**. In our example, we'll select cell **H2**, and the cell reference will appear in the **Location Range:** field.

4. The sparkline will appear in the specified cell.

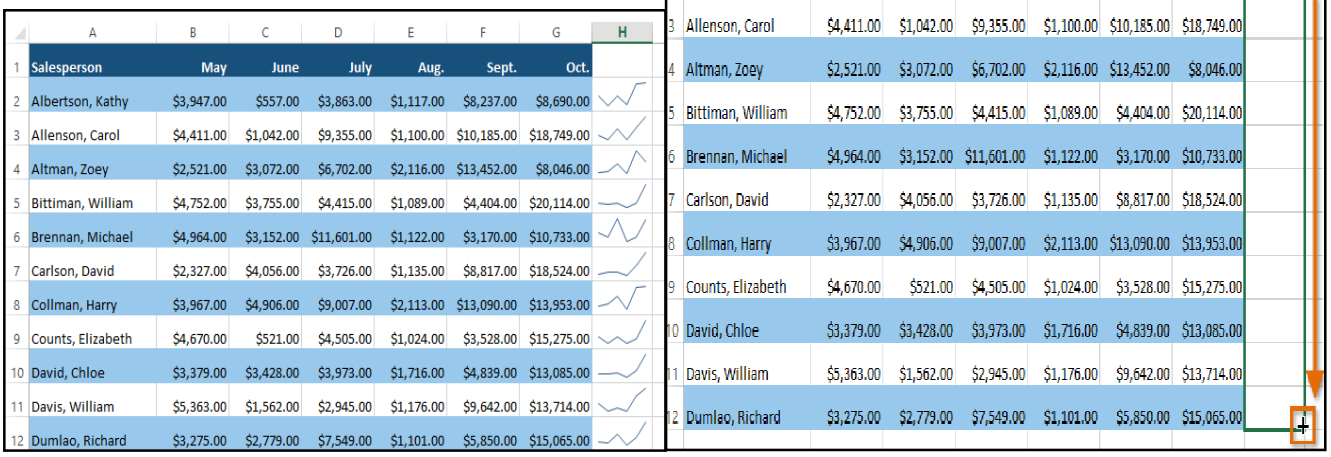


	A	B	C	D	E	F	G	H
1	Salesperson	May	June	July	Aug.	Sept.	Oct.	
2	Albertson, Kathy	$3,947.00	$557.00	$3,863.00	$1,117.00	$8,237.00	$8,690.00	
3	Allenson, Carol	$4,411.00	$1,042.00	$9,355.00	$1,100.00	$10,185.00	$18,749.00	
4	Altman, Zoey	$2,521.00	$3,072.00	$6,702.00	$2,116.00	$13,452.00	$8,046.00	
5	Bittiman, William	$4,752.00	$3,755.00	$4,415.00	$1,089.00	$4,404.00	$20,114.00	



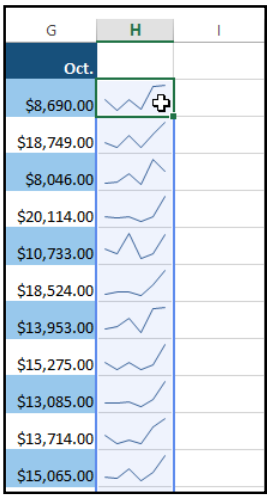
5. Click, hold, and drag the **fill handle** to create sparklines in adjacent cells.

6. Sparklines will be created for the selected cells. In our example, the sparklines show clear **trends** in sales over time for each salesperson in our worksheet.



	A	B	C	D	E	F	G	H
1	Salesperson	May	June	July	Aug.	Sept.	Oct.	
2	Albertson, Kathy	$3,947.00	$557.00	$3,863.00	$1,117.00	$8,237.00	$8,690.00	
3	Allenson, Carol	$4,411.00	$1,042.00	$9,355.00	$1,100.00	$10,185.00	$18,749.00	
4	Altman, Zoey	$2,521.00	$3,072.00	$6,702.00	$2,116.00	$13,452.00	$8,046.00	
5	Bittiman, William	$4,752.00	$3,755.00	$4,415.00	$1,089.00	$4,404.00	$20,114.00	
6	Brennan, Michael	$4,964.00	$3,152.00	$11,601.00	$1,122.00	$3,170.00	$10,733.00	
7	Carlson, David	$2,327.00	$4,056.00	$3,726.00	$1,135.00	$8,817.00	$18,524.00	
8	Collman, Harry	$3,967.00	$4,906.00	$9,007.00	$2,113.00	$13,090.00	$13,953.00	
9	Counts, Elizabeth	$4,670.00	$521.00	$4,505.00	$1,024.00	$3,528.00	$15,275.00	
10	David, Chloe	$3,379.00	$3,428.00	$3,973.00	$1,716.00	$4,839.00	$13,085.00	
11	Davis, William	$5,363.00	$1,562.00	$2,945.00	$1,176.00	$9,642.00	$13,714.00	
12	Dumlao, Richard	$3,275.00	$2,779.00	$7,549.00	$1,101.00	$5,850.00	$15,065.00	

Modifying sparklines



	G	H	I
	Oct.		
	$8,690.00		
	$18,749.00		
	$8,046.00		
	$20,114.00		
	$10,733.00		
	$18,524.00		
	$13,953.00		
	$15,275.00		
	$13,085.00		
	$13,714.00		
	$15,065.00		

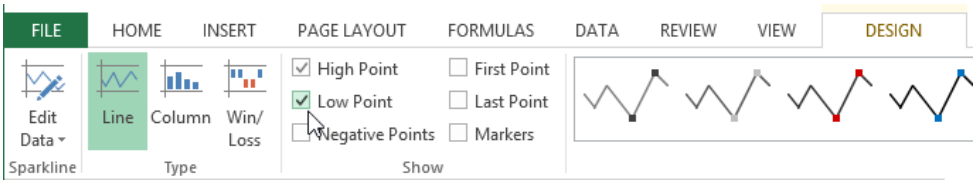
It's easy to change the way sparklines appear in your worksheet. Excel allows you to customize a sparkline's **markers**, **style**, **type**, and more.

To display markers:

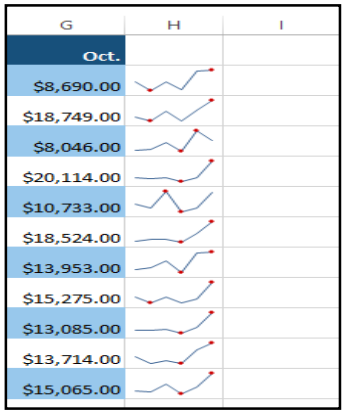
Certain points on a sparkline can be emphasized with **markers**, or dots, making the sparkline more readable. For example, in a line with a lot of **ups and downs**, it might be difficult to tell which values are the highest and lowest points. Showing the **high point** and **low point** will make them easier to identify.

1. Select the **sparkline(s)** you want to change. If they are **grouped** in adjacent cells, you'll only need to click on one sparkline to select them all.

2. From the **Design** tab, select the desired option(s) from the **Show** group. In our example, we'll select **Highpoint** and **Low Point**.

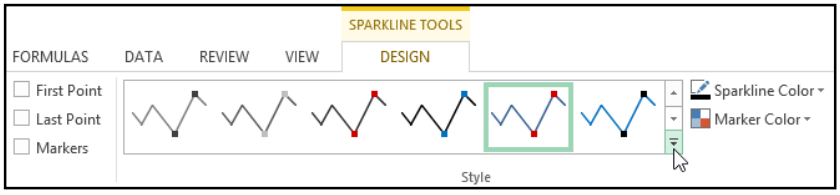


3. The sparkline(s) will update to show the selected markers.

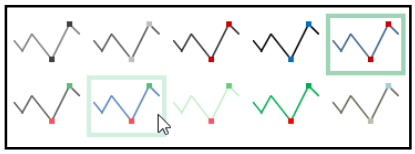


To change the sparkline style:

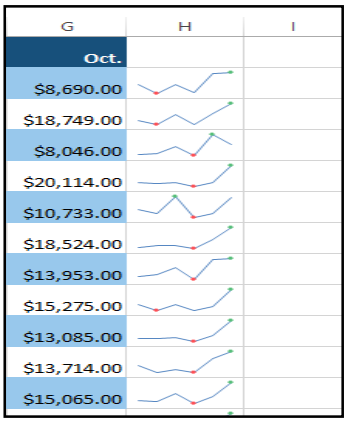
1. Select the **sparkline(s)** you want to change.
2. From the **Design** tab, click the **More** drop-down arrow.



3. Choose the desired **style** from the drop-down menu.

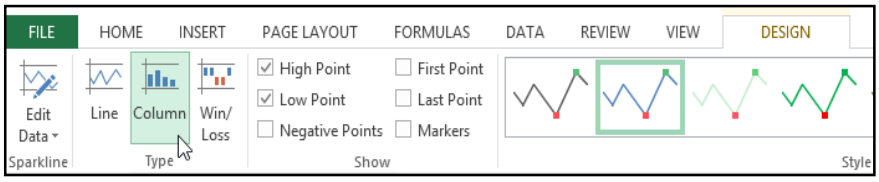


4. The sparkline(s) will update to show the selected style.

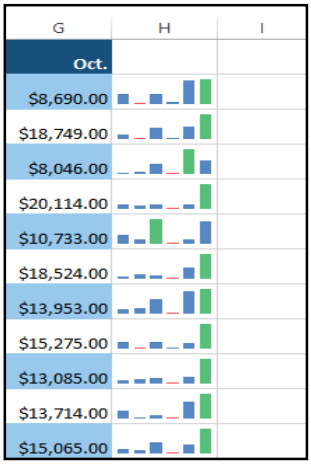


To change the sparkline type:

1. Select the **sparkline(s)** you want to change.
2. From the **Design** tab, select the desired **Sparkline type**. In our example, we'll select **Column**.



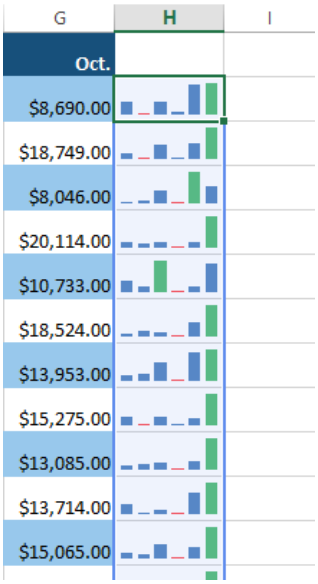
3. The sparkline(s) will update to reflect the new type.



Some sparkline types will be better suited for certain types of data. For example, **Win/Loss** is best suited for data where there could be **positive** and **negative** values (such as **net earnings**).

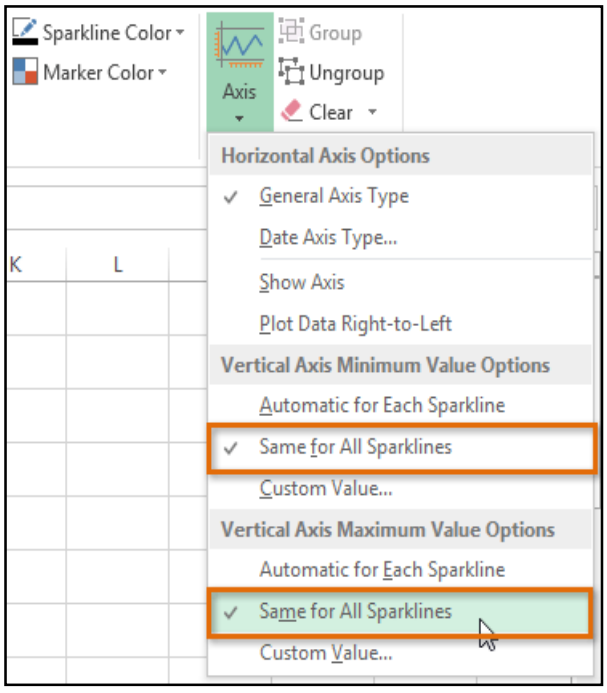
Changing the display range

By default, each sparkline is scaled to fit the maximum and minimum values of its **own data source**: The maximum value will go to the top of the cell, while the minimum will go to the bottom. However, this doesn't show how high or low the values are when compared to the other sparklines. Excel allows you to modify the sparkline **display range**, which makes it easier to **compare** sparklines.

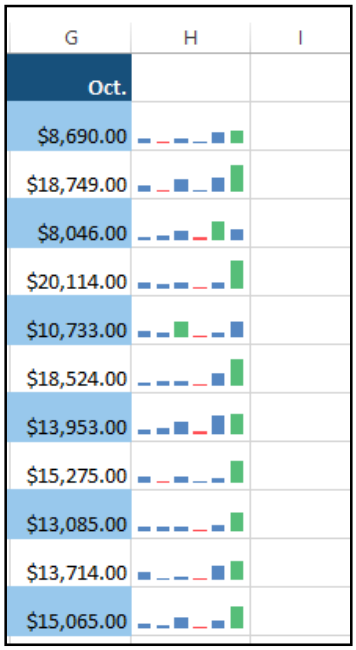


To change the display range:

1. Select the **sparklines** you want to change.
2. From the **Design** tab, click the **Axis** command. A drop-down menu will appear.
3. Below **Vertical Axis Minimum Value Options** and **Vertical Axis Maximum Value Options**, select **Same for All Sparklines**.



4. The sparklines will update to reflect the new display range. In our example, we can now use the sparklines to compare trends for each salesperson.



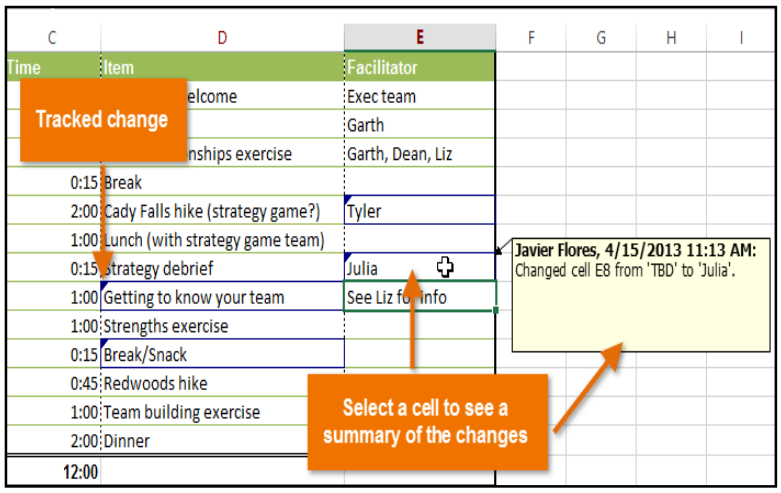
Chapter-21 Track Changes and Comments

Introduction

Let's say someone asked you to proofread or collaborate on a workbook. If you had a printed copy, you might use a red pen to edit cell data, mark spelling errors, or add comments in the margins. Excel allows you to do all of these things electronically using the **Track Changes** and **Comments** features.

Understanding Track Changes

When you turn on the **Track Changes** feature, every cell you edit will be **highlighted** with a unique border and indicator. Selecting a marked cell will show the details of the change. This allows you and other reviewers to see what's been changed before accepting the revisions permanently.

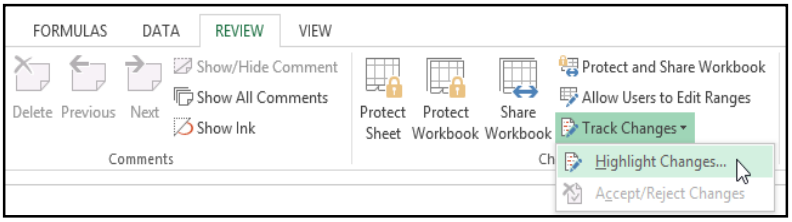


There are some changes Excel **cannot** track. Before using this feature, you may want to review Microsoft's list of **changes that Excel does not track or highlight**.

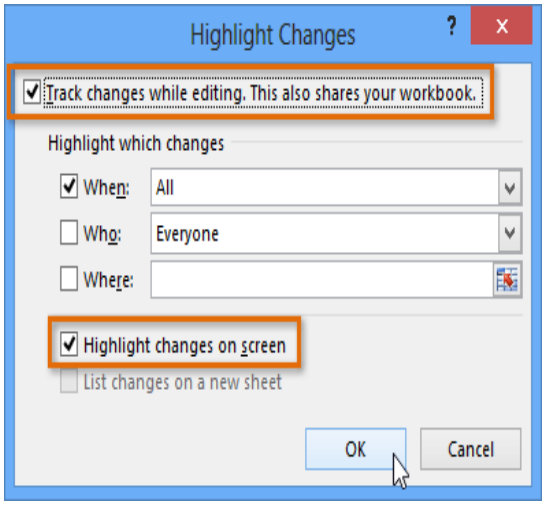
You cannot use Track Changes if your workbook includes **tables**. To remove a table, select it, click the **Design** tab, then click **Convert to Range**.

To turn on Track Changes:

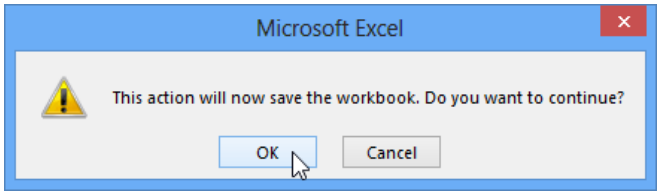
1. From the **Review** tab, click the **Track Changes** command, then select **Highlight Changes...** from the drop-down menu.



2. The **Highlight Changes** dialog box will appear. Check the box next to **Track changes while editing**. Verify the box is checked for **Highlight changes on screen**, then click **OK**.

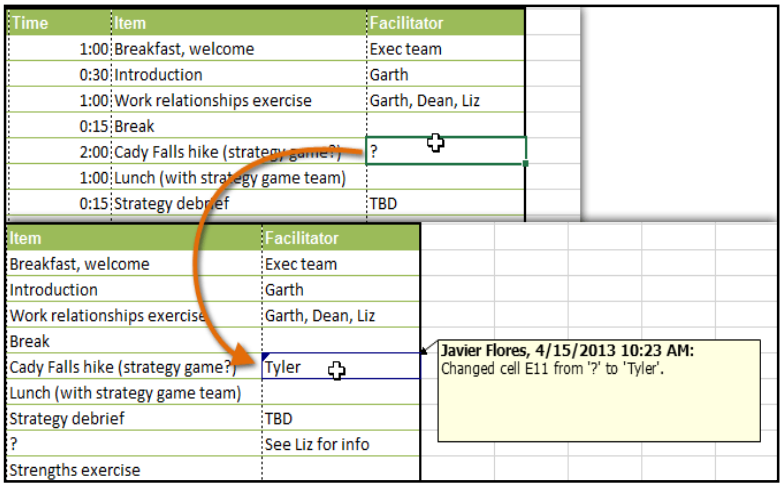


3. If prompted, click **OK** to allow Excel to save your workbook.



4. Track Changes will be **turned on**. A **triangle** and **border color** will appear in any cell you edit. If there are multiple reviewers, each person will be assigned a different color.

5. Select the edited cell to see a summary of the tracked changes. In our example below, we've changed the content of cell E11 from **?** to **Tyler**.

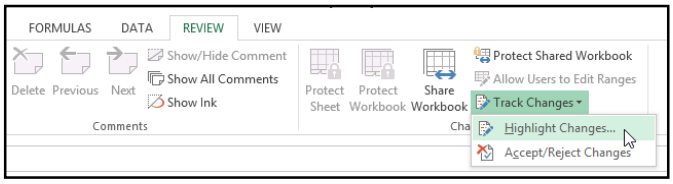


When you turn on Track Changes, your workbook will be **shared** automatically. Shared workbooks are designed to be stored where other users can access and edit the workbook at the same time, such as a network. However, you can also track changes in a local or personal copy, as seen throughout this lesson.

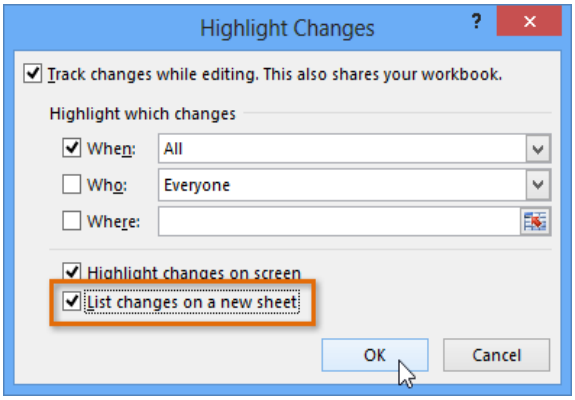
To list changes on a separate worksheet:

You can also view changes on a new worksheet, sometimes called the **Tracked Changes history**. The history lists everything in your worksheet that has been changed, including the **old value** (previous cell content) and the **new value** (current cell content).

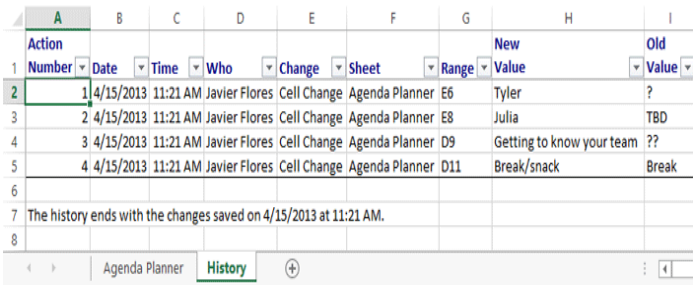
1. **Save** your workbook.
2. From the **Review** tab, click the **Track Changes** command, then select **Highlight Changes...** from the drop-down menu.



3. The **Highlight Changes** dialog box will appear. Check the box next to **List changes on a new sheet**, then click **OK**.



4. The tracked changes will be listed on their own worksheet, called **History**.



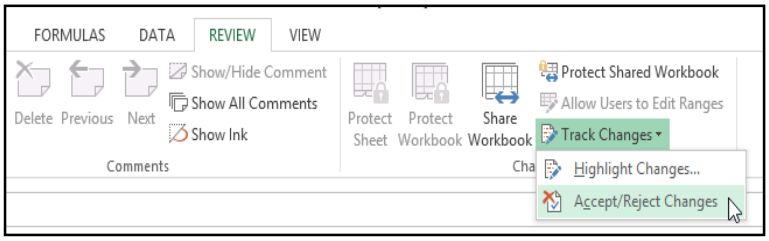
To **remove** the History worksheet from your workbook, you can either **save** your workbook again or uncheck the box next to **List changes on a new sheet** in the **Highlight Changes** dialog box.

Reviewing changes

Tracked changes are really just **suggested** changes. To become permanent, the changes must be **accepted**. On the other hand, the original author may disagree with some of the tracked changes and choose to **reject** them.

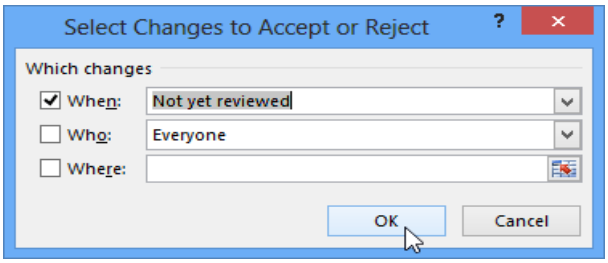
To review tracked changes:

1. From the **Review** tab, click **Track Changes**, then select **Accept/Reject Changes** from the drop-down menu.

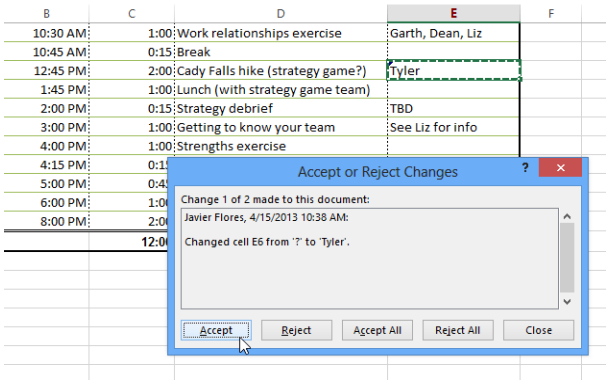


2. If prompted, click **OK** to save your workbook.

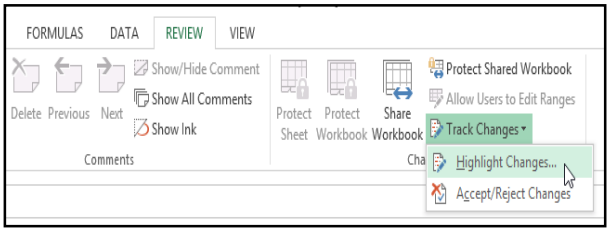
3. A dialog box will appear. Make sure the box next to the **When:** field is checked and set to **Not yet reviewed**, then click **OK**.



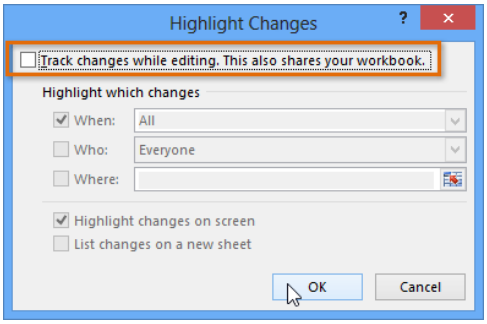
4. A dialog box will appear. Click **Accept** or **Reject** for each change in the workbook. Excel will move through each change automatically until you have reviewed them all.



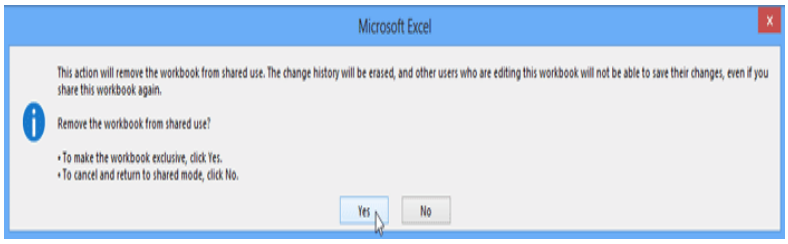
5. Even after accepting or rejecting changes, the tracked changes will still appear in your workbook. To remove them completely, you'll need to **turn off** Track Changes. From the **Review** tab, click **Track Changes**, then select **Highlight Changes** from the drop-down menu.



6. A dialog box will appear. Uncheck the box next to **Track changes while editing**, then click **OK**.



7. Click **Yes** to confirm that you want to turn off Track Changes and stop sharing your workbook.



To accept or reject all the changes at once, click **Accept All** or **Reject All** in the Accept or Reject Changes dialog box.

Turning off Track Changes will remove any tracked changes in your workbook. You will not be able to view, accept, or reject changes; instead, all changes will all be accepted **automatically**. Always review the changes in your worksheet before turning off Track Changes.

Comments

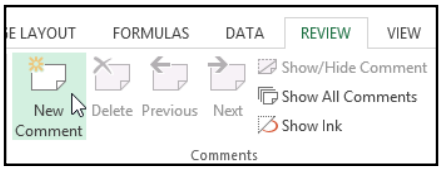
Sometimes you may want to add a **comment** to provide feedback instead of editing the contents of a cell. While often used in combination with Track Changes, you don't necessarily need to have Track Changes turned on to use comments.

To add a comment:

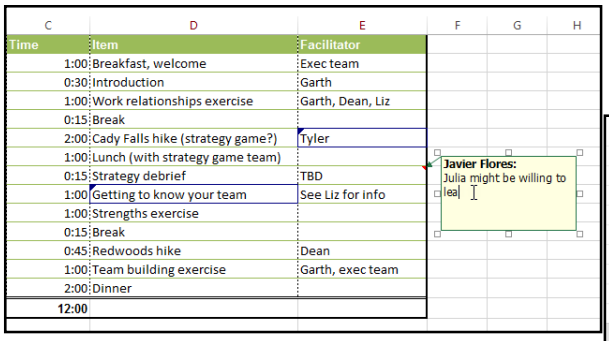
1. Select the **cell** where you want the comment to appear. In our example, we'll select cell **E8**.

	A	B	C	D	E	F
1	Start	End	Time	Item	Facilitator	
2	8:00 AM	9:00 AM	1:00	Breakfast, welcome	Exec team	
3	9:00 AM	9:30 AM	0:30	Introduction	Garth	
4	9:30 AM	10:30 AM	1:00	Work relationships exercise	Garth, Dean, Liz	
5	10:30 AM	10:45 AM	0:15	Break		
6	10:45 AM	12:45 PM	2:00	Cady Falls hike (strategy game?)	Tyler	
7	12:45 PM	1:45 PM	1:00	Lunch (with strategy game team)		
8	1:45 PM	2:00 PM	0:15	Strategy debrief	TBD	
9	2:00 PM	3:00 PM	1:00	Getting to know your team	See Liz for info	
10	3:00 PM	4:00 PM	1:00	Strengths exercise		
11	4:00 PM	4:15 PM	0:15	Break		
12	4:15 PM	5:00 PM	0:45	Redwoods hike	Dean	
13	5:00 PM	6:00 PM	1:00	Team building exercise	Garth, exec team	
14	6:00 PM	8:00 PM	2:00	Dinner		
15	Total		12:00			

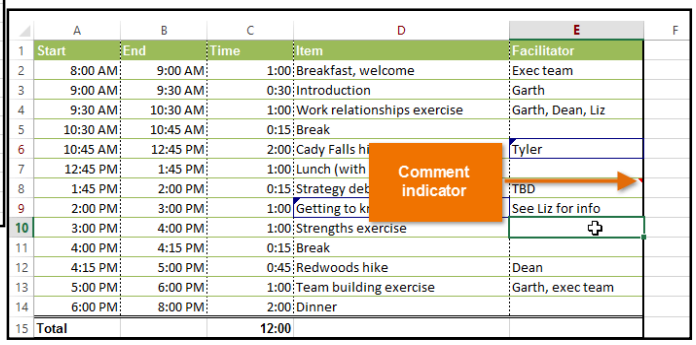
2. From the **Review** tab, click the **New Comment** command.



3. A **comment box** will appear. Type your comment, then click anywhere outside the box to close the comment.



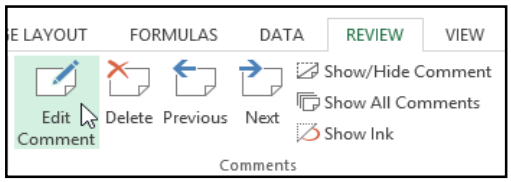
4. The comment will be added to the cell, represented by the **red triangle** in the top-right corner.



5. Select the cell again to view the comment.

To edit a comment:

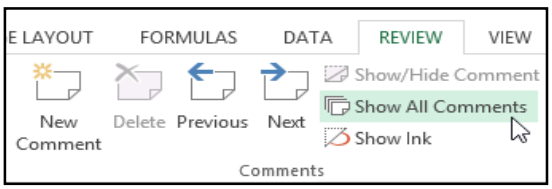
1. Select the **cell** containing the comment you want to edit.
2. From the **Review** tab, click the **Edit Comment** command.



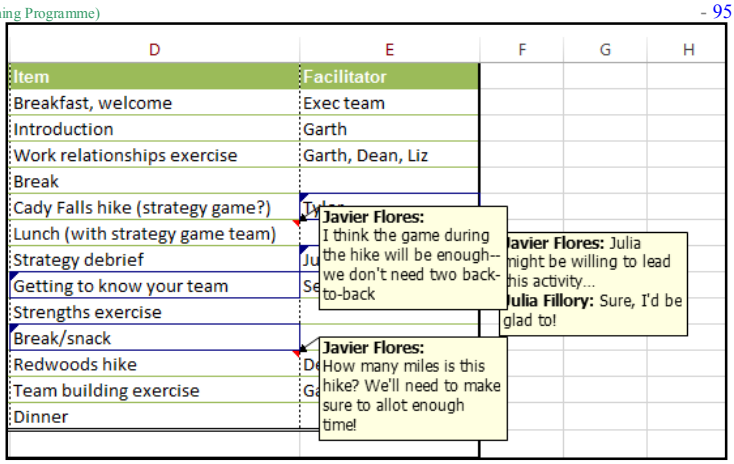
3. The **comment box** will appear. Edit the comment as desired, then click anywhere outside the box to close the comment.

To show or hide comments:

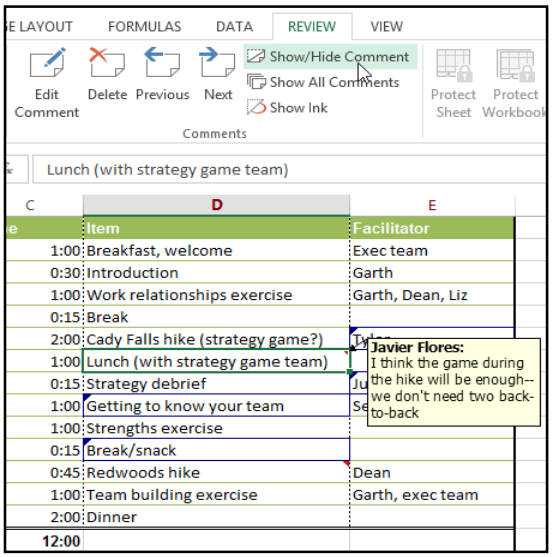
1. From the **Review** tab, click the **Show All Comments** command to view every comment in your worksheet at the same time.



2. All comments in the worksheet will appear. Click the **Show All Comments** command again to hide them.

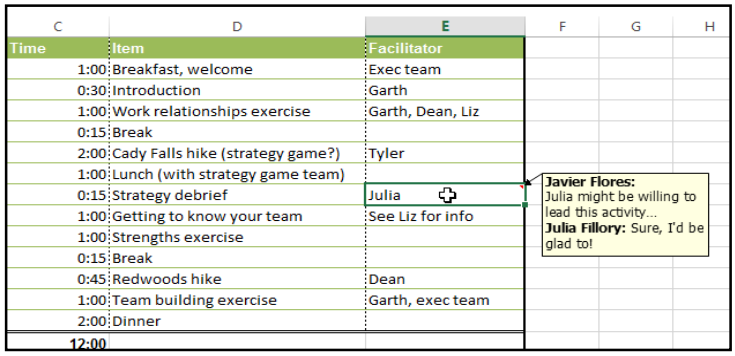


You can also choose to show and hide individual comments by selecting the desired cell and then clicking the **Show/Hide Comment** command.

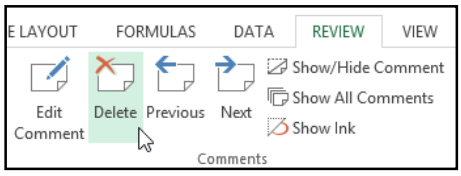


To delete a comment:

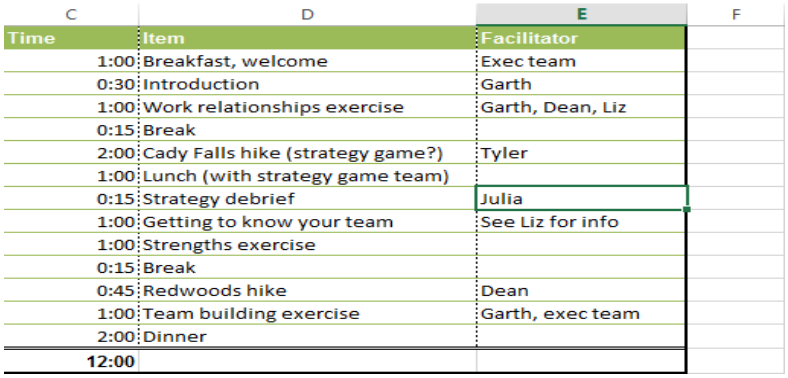
1. Select the **cell** containing the comment you want to delete. In our example, we'll select cell **E8**.



2. From the **Review** tab, click the **Delete** command in the **Comments** group.



3. The comment will be deleted.



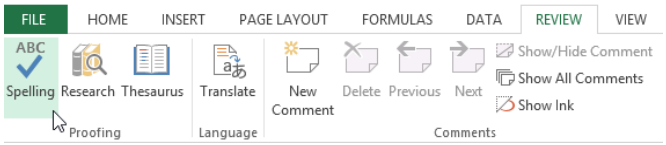
Chapter-22 Finalizing and Protecting Workbooks

Introduction

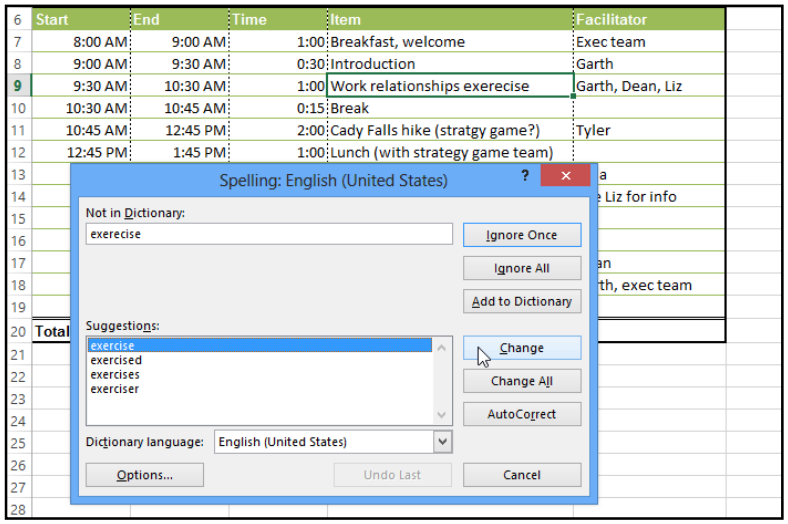
Before sharing a workbook, you'll want to make sure it doesn't include any spelling errors or information you want to keep private. Fortunately, Excel includes several tools to help **finalize** and **protect** your workbook, including **Spell Check** and the **Document Inspector**.

To use Spell Check:

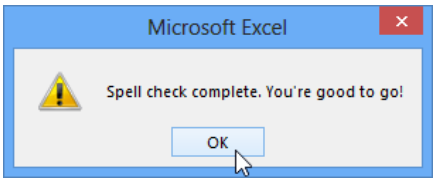
1. From the **Review** tab, click the **Spelling** command.



2. The **Spelling** dialog box will appear. For each spelling error in your worksheet, Spell Check will try to offer **suggestions** for the correct spelling. Choose a suggestion, then click **Change** to correct the error.



3. A dialog box will appear after reviewing all spelling errors. Click **OK** to close Spell Check.



If there are no appropriate suggestions, you can also enter the correct spelling manually.

Ignoring spelling "errors"

Spell Check **isn't always correct**. It will sometimes mark certain words as incorrect, even if they're spelled correctly. This often happens with names, which may not be in the dictionary. You can choose **not** to change a spelling "error" using one of three options:

1. **Ignore Once:** This will skip the word without changing it.
2. **Ignore All:** This will skip the word without changing it and also skip all other instances of the word in your worksheet.
3. **Add:** This adds the word to the dictionary so it will never appear as an error again. Make sure the word is spelled correctly before choosing this option.

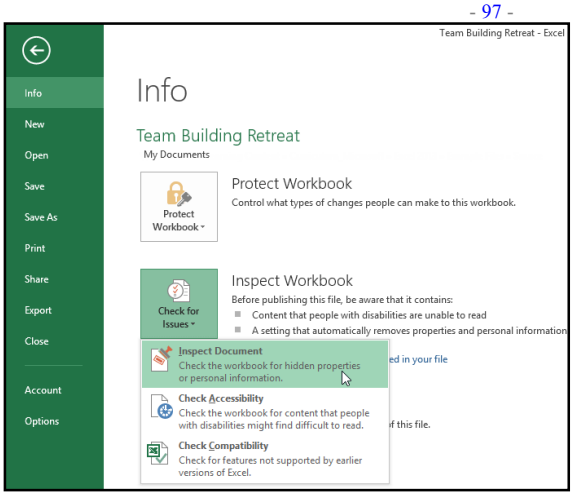
Document Inspector

Whenever you create or edit a workbook, certain **personal information** may be added to the file automatically. You can use the Document Inspector to remove this kind of information before sharing a workbook with others.

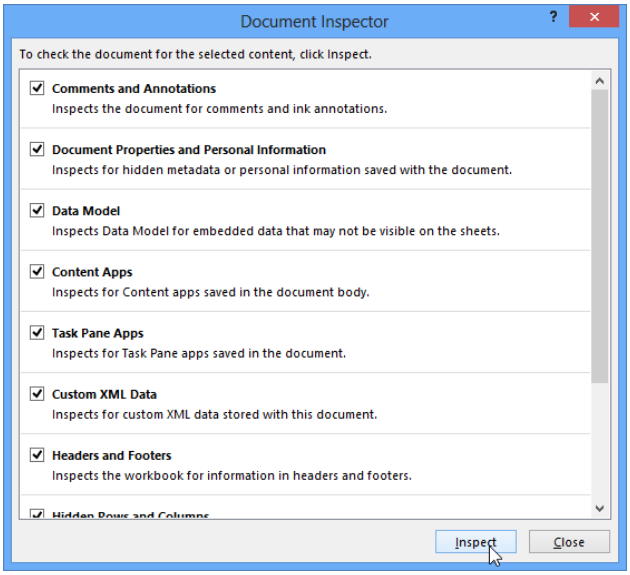
Because some changes may be permanent, it's a good idea to save an additional copy of your workbook before using the Document Inspector to remove information.

To use the Document Inspector:

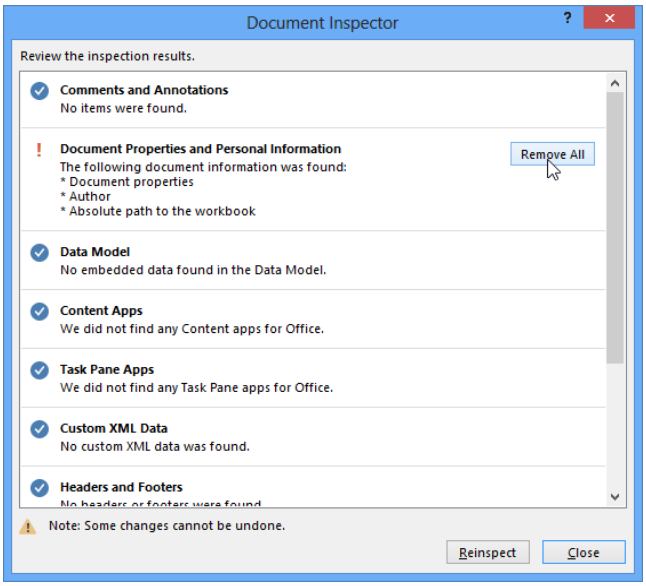
1. Click the **File** tab to access **Backstage view**.
2. From the **Info** pane, click **Check for Issues**, then select **Inspect Document** from the drop-down menu.



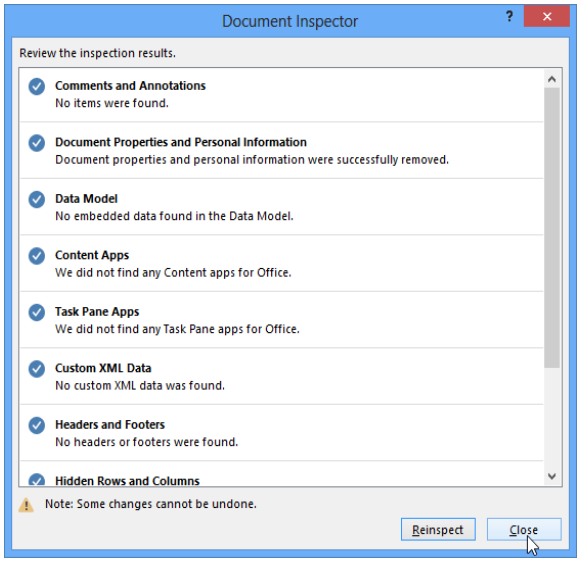
3. The **Document Inspector** will appear. Check or uncheck boxes, depending on the content you want to review, then click **Inspect**. In our example, we'll leave everything selected.



4. The **inspection results** will appear. In our example, we can see that our workbook contains some personal information, so we'll click **Remove All** to remove that information from the workbook.



5. When you're done, click **Close**.



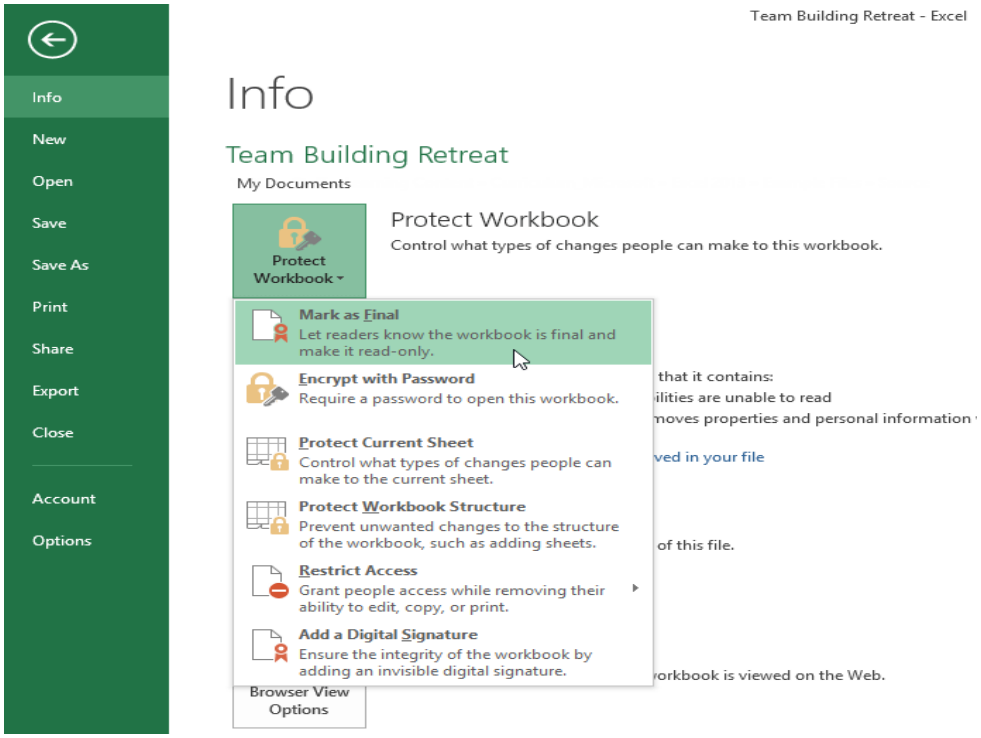
Protecting your workbook

By default, anyone with access to your workbook will be able to open, copy, and edit its content unless you **protect** it. There are many different ways to protect a workbook, depending on your needs.

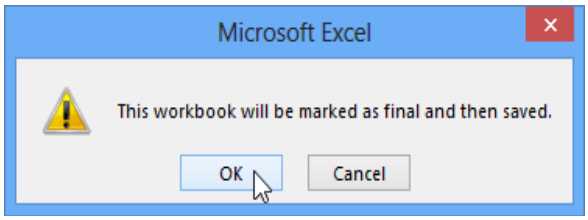
To protect your workbook:

1. Click the **File** tab to access **Backstage view**.
2. From the **Info** pane, click the **Protect Workbook** command.

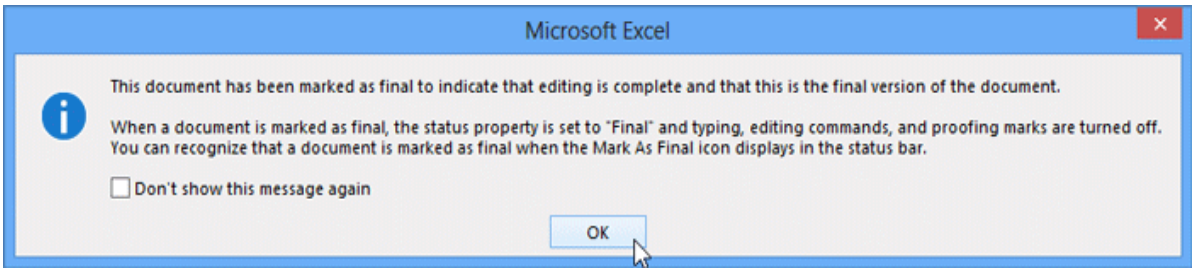
3. In the drop-down menu, choose the option that best suits your needs. In our example, we'll select **Mark as Final**. Marking your workbook as final is a good way to discourage others from editing the workbook, while the other options give you even more control if needed.



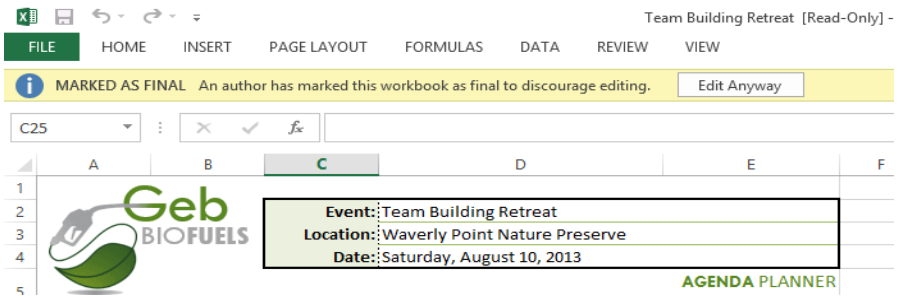
4. A dialog box will appear, prompting you to save. Click **OK**.



5. Another dialog box will appear. Click **OK**.



6. The workbook will be marked as final.



Marking a workbook as final will not prevent someone from editing it. If you want to prevent people from editing it, you can use the **Restrict Access** option instead.

Capter-23 Conditional Formatting

Introduction

Let's say you have a worksheet with thousands of rows of data. It would be extremely difficult to see patterns and trends just from examining the raw information. Similar to charts and sparklines, **conditional formatting** provides another way to visualize data and make worksheets easier to understand.

Understanding conditional formatting

Conditional formatting allows you to automatically apply formatting—such as **colors**, **icons**, and **data bars**—to one or more cells based on the **cell value**. To do this, you'll need to create a **conditional formatting rule**. For example, a conditional formatting rule might be: **If the value is less than $2000, color the cell red.** By applying this rule, you'd be able to quickly see which cells contain values less than $2000.

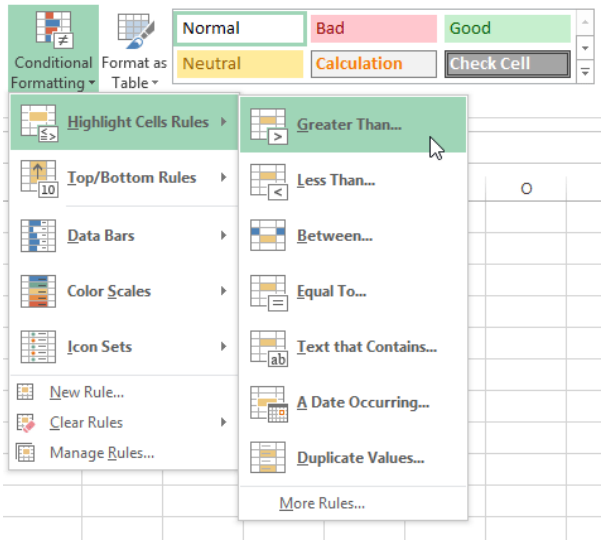
	A	B	C	D	E
1	**Salesperson**	**May**	**June**	**July**	**Aug.**
2	Albertson, Kathy	$3,947.00	$557.00	$3,863.00	$1,117.00
3	Allenson, Carol	$4,411.00	$1,042.00	$9,355.00	$1,100.00
4	Altman, Zoey	$2,521.00	$3,072.00	$6,702.00	$2,116.00
5	Bittiman, William	$4,752.00	$3,755.00	$4,415.00	$1,089.00
6	Brennan, Michael	$4,964.00	$3,152.00	$11,601.00	$1,122.00
7	Carlson, David	$2,327.00	$4,056.00	$3,726.00	$1,135.00
8	Collman, Harry	$3,967.00	$4,906.00	$9,007.00	$2,113.00
9	Counts, Elizabeth	$4,670.00	$521.00	$4,505.00	$1,024.00
10	David, Chloe	$3,379.00	$3,428.00	$3,973.00	$1,716.00

To create a conditional formatting rule:

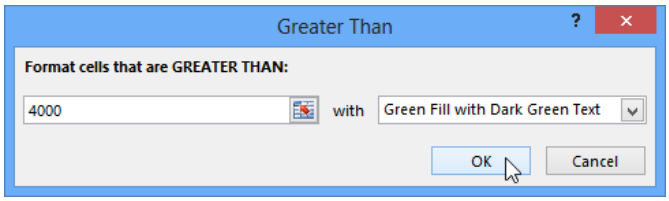
In our example, we have a worksheet containing sales data, and we'd like to see which salespeople are meeting their monthly sales goals. The sales goal is $4000 per month, so we'll create a conditional formatting rule for any cells containing a value higher than 4000.

	A	B	C	D	E
1	**Salesperson**	**May**	**June**	**July**	**Aug.**
2	Albertson, Kathy	$3,947.00	$557.00	$3,863.00	$1,117.00
3	Allenson, Carol	$4,411.00	$1,042.00	$9,355.00	$1,100.00
4	Altman, Zoey	$2,521.00	$3,072.00	$6,702.00	$2,116.00
5	Bittiman, William	$4,752.00	$3,755.00	$4,415.00	$1,089.00
6	Brennan, Michael	$4,964.00	$3,152.00	$11,601.00	$1,122.00
7	Carlson, David	$2,327.00	$4,056.00	$3,726.00	$1,135.00
8	Collman, Harry	$3,967.00	$4,906.00	$9,007.00	$2,113.00
9	Counts, Elizabeth	$4,670.00	$521.00	$4,505.00	$1,024.00
10	David, Chloe	$3,379.00	$3,428.00	$3,973.00	$1,716.00

1. Select the **desired cells** for the conditional formatting rule.
2. From the **Home** tab, click the **Conditional Formatting** command. A drop-down menu will appear.
3. Hover the mouse over the desired **conditional formatting type**, then select the **desired rule** from the menu that appears. In our example, we want to **highlight cells** that are **greater than** $4000.



4. A dialog box will appear. Enter the **desired value(s)** into the blank field. In our example, we'll enter 4000 as our value.
5. Select a **formatting style** from the drop-down menu. In our example, we'll choose **Green Fill with Dark Green Text**, then click **OK**.



6. The conditional formatting will be applied to the selected cells. In our example, it's easy to see which salespeople reached the $4000 sales goal for each month.

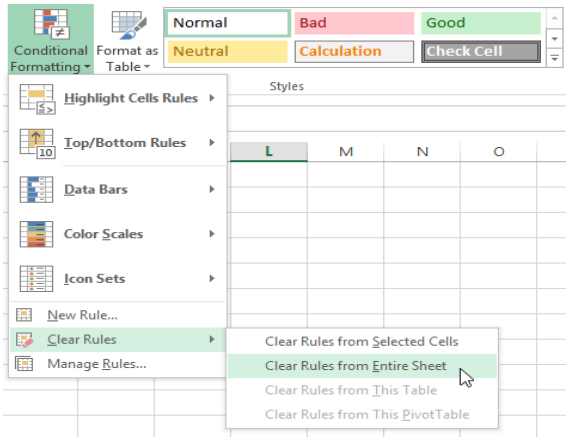
	A	B	C	D	E
1	**Salesperson**	**May**	**June**	**July**	**Aug.**
2	Albertson, Kathy	$3,947.00	$557.00	$3,863.00	$1,117.00
3	Allenson, Carol	$4,411.00	$1,042.00	$9,355.00	$1,100.00
4	Altman, Zoey	$2,521.00	$3,072.00	$6,702.00	$2,116.00
5	Bittiman, William	$4,752.00	$3,755.00	$4,415.00	$1,089.00
6	Brennan, Michael	$4,964.00	$3,152.00	$11,601.00	$1,122.00
7	Carlson, David	$2,327.00	$4,056.00	$3,726.00	$1,135.00
8	Collman, Harry	$3,967.00	$4,906.00	$9,007.00	$2,113.00
9	Counts, Elizabeth	$4,670.00	$521.00	$4,505.00	$1,024.00
10	David, Chloe	$3,379.00	$3,428.00	$3,973.00	$1,716.00

You can apply multiple conditional formatting rules to a cell range or worksheet, allowing you to visualize different trends and patterns in your data.

	A	B	C	D	E
1	**Salesperson**	**May**	**June**	**July**	**Aug.**
2	Albertson, Kathy	$3,947.00	$557.00	$3,863.00	$1,117.00
3	Allenson, Carol	$4,411.00	$1,042.00	$9,355.00	$1,100.00
4	Altman, Zoey	$2,521.00	$3,072.00	$6,702.00	$2,116.00
5	Bittiman, William	$4,752.00	$3,755.00	$4,415.00	$1,089.00
6	Brennan, Michael	$4,964.00	$3,152.00	$11,601.00	$1,122.00
7	Carlson, David	$2,327.00	$4,056.00	$3,726.00	$1,135.00
8	Collman, Harry	$3,967.00	$4,906.00	$9,007.00	$2,113.00
9	Counts, Elizabeth	$4,670.00	$521.00	$4,505.00	$1,024.00
10	David, Chloe	$3,379.00	$3,428.00	$3,973.00	$1,716.00

To remove conditional formatting:

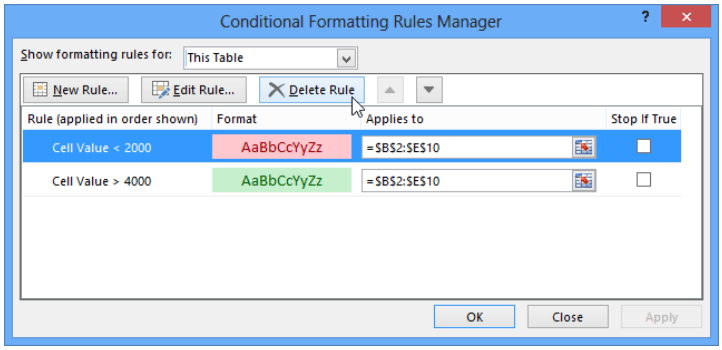
1. Click the **Conditional Formatting** command. A drop-down menu will appear.
2. Hover the mouse over **Clear Rules,** and choose which rules you want to clear. In our example, we'll select **Clear Rules from Entire Sheet** to remove all conditional formatting from the worksheet.



3. The conditional formatting will be removed.

	A	B	C	D	E
1	**Salesperson**	**May**	**June**	**July**	**Aug.**
2	Albertson, Kathy	$3,947.00	$557.00	$3,863.00	$1,117.00
3	Allenson, Carol	$4,411.00	$1,042.00	$9,355.00	$1,100.00
4	Altman, Zoey	$2,521.00	$3,072.00	$6,702.00	$2,116.00
5	Bittiman, William	$4,752.00	$3,755.00	$4,415.00	$1,089.00
6	Brennan, Michael	$4,964.00	$3,152.00	$11,601.00	$1,122.00
7	Carlson, David	$2,327.00	$4,056.00	$3,726.00	$1,135.00
8	Collman, Harry	$3,967.00	$4,906.00	$9,007.00	$2,113.00
9	Counts, Elizabeth	$4,670.00	$521.00	$4,505.00	$1,024.00
10	David, Chloe	$3,379.00	$3,428.00	$3,973.00	$1,716.00

Click **Manage Rules** to edit or delete **individual** rules. This is especially useful if you have applied **multiple rules** to a worksheet.



Conditional formatting presets

Excel has several predefined styles—or **presets**—you can use to quickly apply conditional formatting to your data. They are grouped into three categories:

- **Data Bars** are horizontal bars added to each cell, much like a **bar graph**.

$3,863.00	$1,117.00	$8,237.00	$8,690.00
$9,355.00	$1,100.00	$10,185.00	$18,749.00
$6,702.00	$2,116.00	$13,452.00	$8,046.00
$4,415.00	$1,089.00	$4,404.00	$20,114.00

- **Color Scales** change the color of each cell based on its value. Each color scale uses a **two- or three-color gradient**. For example, in the **Green - Yellow - Red** color scale, the **highest** values are green, the **average** values are yellow, and the **lowest** values are red.

$3,863.00	$1,117.00	$8,237.00	$8,690.00
$9,355.00	$1,100.00	$10,185.00	$18,749.00
$6,702.00	$2,116.00	$13,452.00	$8,046.00
$4,415.00	$1,089.00	$4,404.00	$20,114.00

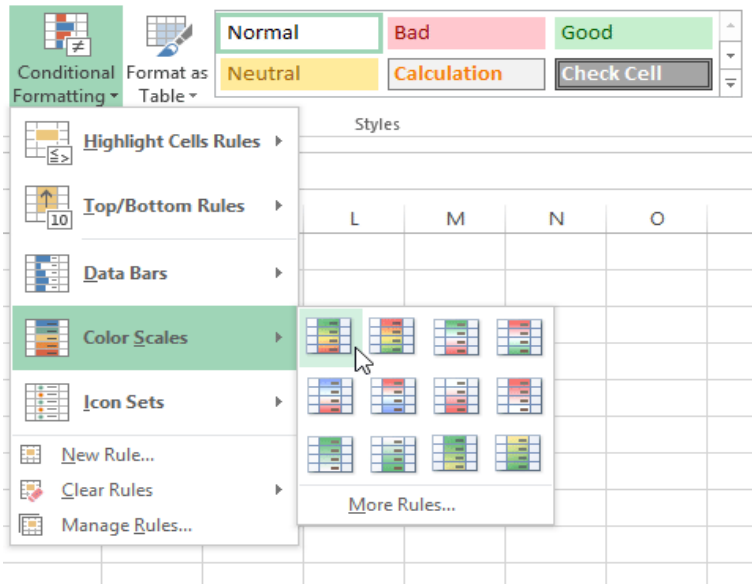
- **Icon Sets** add a specific icon to each cell based on its value.

$3,863.00	$1,117.00	$8,237.00	$8,690.00
$9,355.00	$1,100.00	$10,185.00	$18,749.00
$6,702.00	$2,116.00	$13,452.00	$8,046.00
$4,415.00	$1,089.00	$4,404.00	$20,114.00

To use preset conditional formatting:

1. Select the **desired cells** for the conditional formatting rule.
2. Click the **Conditional Formatting** command. A drop-down menu will appear.
3. Hover the mouse over the **desired preset**, then choose a **preset style** from the menu that appears.

	A	B	C	D	E
1	**Salesperson**	**May**	**June**	**July**	**Aug.**
2	Albertson, Kathy	$3,947.00	$557.00	$3,863.00	$1,117.00
3	Allenson, Carol	$4,411.00	$1,042.00	$9,355.00	$1,100.00
4	Altman, Zoey	$2,521.00	$3,072.00	$6,702.00	$2,116.00
5	Bittiman, William	$4,752.00	$3,755.00	$4,415.00	$1,089.00
6	Brennan, Michael	$4,964.00	$3,152.00	$11,601.00	$1,122.00
7	Carlson, David	$2,327.00	$4,056.00	$3,726.00	$1,135.00
8	Collman, Harry	$3,967.00	$4,906.00	$9,007.00	$2,113.00
9	Counts, Elizabeth	$4,670.00	$521.00	$4,505.00	$1,024.00
10	David, Chloe	$3,379.00	$3,428.00	$3,973.00	$1,716.00



4. The conditional formatting will be applied to the selected cells.

	A	B	C	D	E
1	**Salesperson**	**May**	**June**	**July**	**Aug.**
2	Albertson, Kathy	$3,947.00	$557.00	$3,863.00	$1,117.00
3	Allenson, Carol	$4,411.00	$1,042.00	$9,355.00	$1,100.00
4	Altman, Zoey	$2,521.00	$3,072.00	$6,702.00	$2,116.00
5	Bittiman, William	$4,752.00	$3,755.00	$4,415.00	$1,089.00
6	Brennan, Michael	$4,964.00	$3,152.00	$11,601.00	$1,122.00
7	Carlson, David	$2,327.00	$4,056.00	$3,726.00	$1,135.00
8	Collman, Harry	$3,967.00	$4,906.00	$9,007.00	$2,113.00
9	Counts, Elizabeth	$4,670.00	$521.00	$4,505.00	$1,024.00
10	David, Chloe	$3,379.00	$3,428.00	$3,973.00	$1,716.00

Chapter-24 PivotTables

Introduction

When you have a lot of data, it can sometimes be difficult to analyze all of the information in your worksheet. **PivotTables** can help make your worksheets more manageable by **summarizing** data and allowing you to **manipulate** it in different ways

Using PivotTables to answer questions

Let's say we wanted to answer the question: **What is the amount sold by each salesperson?** for the sales data in the example below. Answering this question could be time consuming and difficult—each salesperson appears on multiple rows, and we would need to total all of their different orders individually. We could use the **Subtotal** command to help find the total for each salesperson, but we would still have a lot of data to work with.

	A	B	C	D	E	F
1	Salesperson	Region	Account	Order Amount	Month	
2	Albertson, Kathy	East	29386	$925.00	January	
3	Albertson, Kathy	East	74830	$875.00	February	
4	Albertson, Kathy	East	90099	$500.00	February	
5	Albertson, Kathy	East	74830	$350.00	March	
6	Brennan, Michael	West	82853	$400.00	January	
7	Brennan, Michael	West	72949	$850.00	January	
8	Brennan, Michael	West	90044	$1,500.00	January	
9	Brennan, Michael	West	82853	$550.00	February	
10	Brennan, Michael	West	72949	$400.00	March	
11	Davis, William	South	55223	$235.00	February	
12	Davis, William	South	10354	$850.00	January	
13	Davis, William	South	50192	$600.00	March	
14	Davis, William	South	27589	$250.00	January	
15	Dumlao, Richard	West	67275	$400.00	January	

Fortunately, a **PivotTable** can instantly **calculate** and **summarize** the data in a way that's both easy to read and manipulate. When we're done, the PivotTable will look something like this:

Row Labels	Sum of Order Amount
Albertson, Kathy	$2,650.00
Brennan, Michael	$3,700.00
Davis, William	$1,935.00
Dumlao, Richard	$1,490.00
Flores, Tia	$4,565.00
Post, Melissa	$1,690.00
Thompson, Shannon	$3,160.00
Walters, Chris	$4,375.00
Grand Total	**$23,565.00**

Once you've created a PivotTable, you can use it to answer different questions by rearranging—or **pivoting**—the data. For example, if we wanted to answer the question: **What is the total amount sold in each month?** we could modify our PivotTable to look like this:

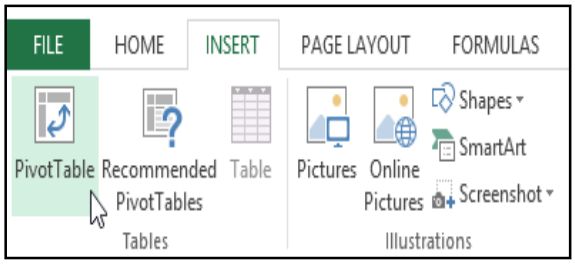
Row Labels	Sum of Order Amount
January	$9,090.00
February	$9,160.00
March	$5,315.00
Grand Total	**$23,565.00**

To create a PivotTable:

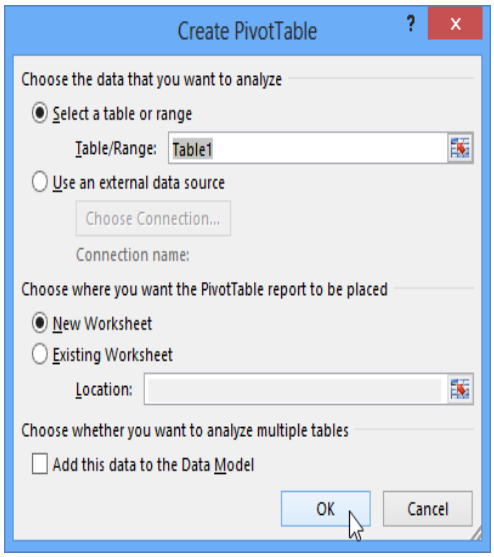
1. Select the **table** or **cells** (including column headers) containing the data you want to use.

	A	B	C	D	E	F
1	Salesperson	Region	Account	Order Amount	Month	
2	Albertson, Kathy	East	29386	$925.00	January	
3	Albertson, Kathy	East	74830	$875.00	February	
4	Albertson, Kathy	East	90099	$500.00	February	
5	Albertson, Kathy	East	74830	$350.00	March	
6	Brennan, Michael	West	82853	$400.00	January	
7	Brennan, Michael	West	72949	$850.00	January	
8	Brennan, Michael	West	90044	$1,500.00	January	
9	Brennan, Michael	West	82853	$550.00	February	
10	Brennan, Michael	West	72949	$400.00	March	
11	Davis, William	South	55223	$235.00	February	
12	Davis, William	South	10354	$850.00	January	
13	Davis, William	South	50192	$600.00	March	
14	Davis, William	South	27589	$250.00	January	
15	Dumlao, Richard	West	67275	$400.00	January	

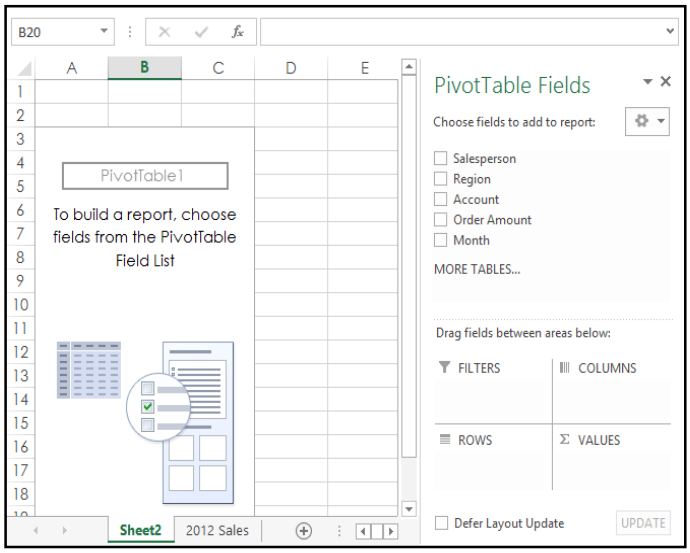
2. From the **Insert** tab, click the **PivotTable** command.



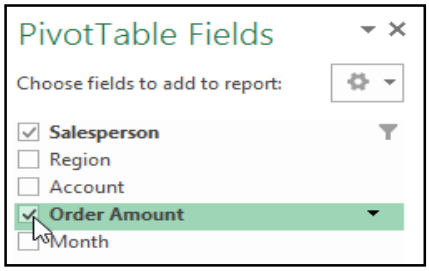
3. The **Create PivotTable** dialog box will appear. Choose your settings, then click **OK**. In our example, we'll use **Table1** as our source data and place the PivotTable on a **new worksheet**.



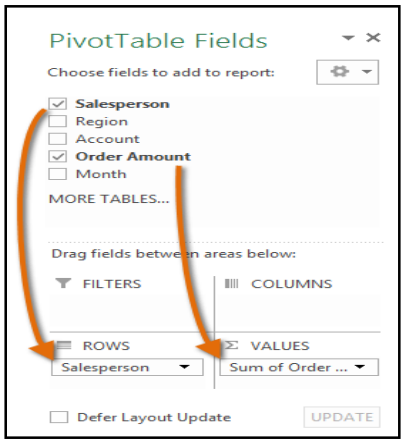
4. A blank **PivotTable** and **Field List** will appear on a new worksheet.



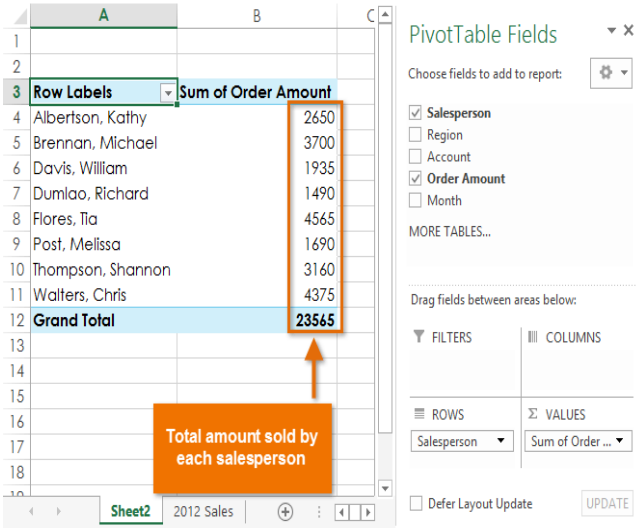
5. Once you create a PivotTable, you'll need to decide which **fields** to add. Each field is simply a **column header** from the source data. In the **PivotTable Field List**, check the box for each field you want to add. In our example, we want to know the total **amount** sold by each **salesperson**, so we'll check the **Salesperson** and **Order Amount** fields.



6. The selected fields will be added to one of the four areas below the Field List. In our example, the **Salesperson** field has been added to the **Rows** area, while the **Order Amount** has been added to the **Values** area. Alternatively, you can click, hold, and drag a field to the desired area.



7. The PivotTable will calculate and summarize the selected fields. In our example, the PivotTable shows the amount sold by each salesperson.



Just like with normal spreadsheet data, you can sort the data in a PivotTable using the **Sort & Filter** command in the Home tab. You can also apply any type of **number formatting** you want. For example, you may want to change the **Number Format** to **Currency**. However, be aware that some types of formatting may disappear when you modify the PivotTable.

Row Labels	Sum of Order Amount
Flores, Tia	$4,565.00
Walters, Chris	$4,375.00
Brennan, Michael	$3,700.00
Thompson, Shannon	$3,160.00
Albertson, Kathy	$2,650.00
Davis, William	$1,935.00
Post, Melissa	$1,690.00
Dumlao, Richard	$1,490.00
Grand Total	**$23,565.00**

If you change any of the data in your source worksheet, the PivotTable **will not update automatically**. To manually update it, select the PivotTable and then go to **Analyze** ➔ **Refresh**.

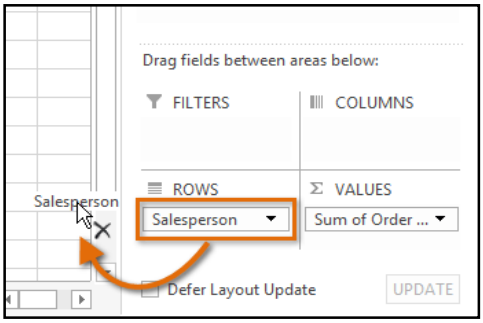
Pivoting data

One of the best things about PivotTables is that they can quickly **pivot**—or reorganize—data, allowing you to look at your worksheet data in different ways. Pivoting data can help you answer **different questions** and even **experiment** with the data to discover new trends and patterns.

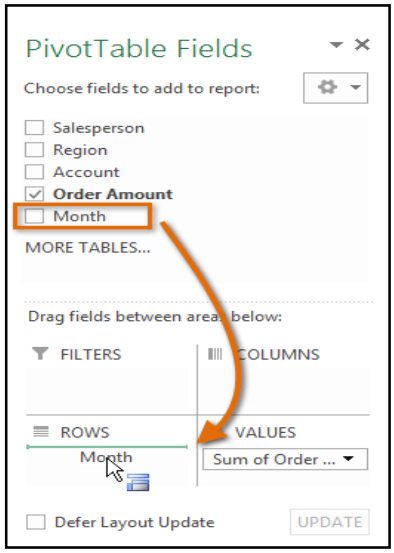
In our example, we used the PivotTable to answer the question: **What is the total amount sold by each salesperson**? But now we'd like to answer a new question: **What is the total amount sold in each month**? We can do this by simply changing the field in the **Rows** area.

To change the row:

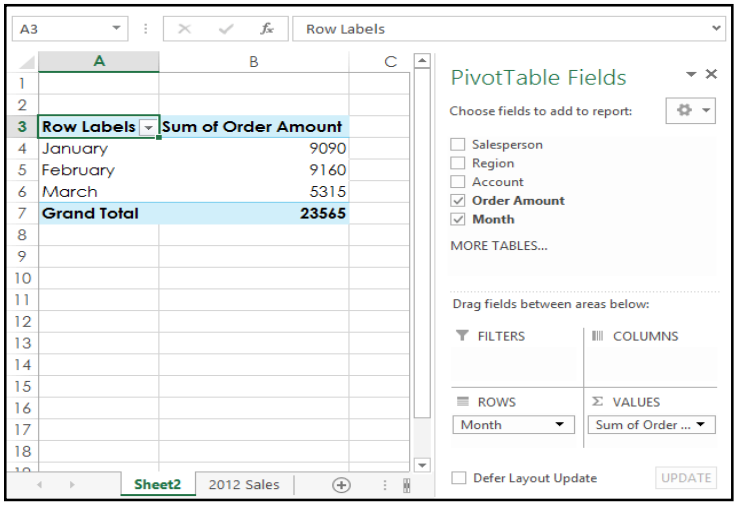
1. Click, hold, and drag any existing **fields** out of the **Rows** area. The field will disappear.

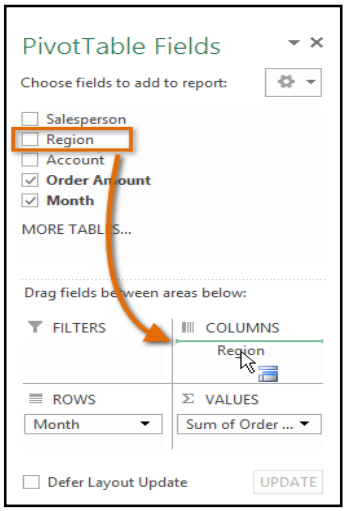


2. Drag a new field from the **Field List** into the **Rows** area. In our example, we'll use the **Month** field.



3. The PivotTable will adjust—or pivot—to show the new data. In our example, it now shows the total order amount for each month.





To add columns:

So far, our PivotTable has only shown **one column** of data at a time. In order to show **multiple columns**, you'll need to add a field to the **Columns** area.

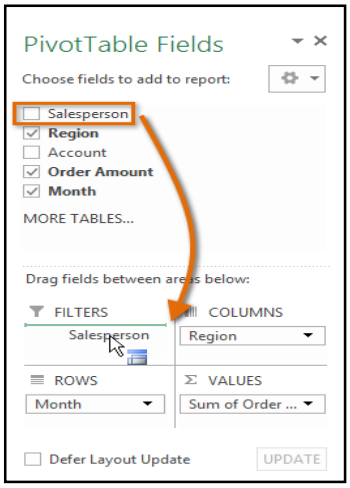
1. Drag a field from the **Field List** into the **Columns** area. In our example, we'll use the **Region** field.

2. The PivotTable will include multiple columns. In our example, there is now a column for each region.

Sum of Order Amount	Column Labels				
Row Labels	East	North	South	West	Grand Total
January	1690	1140	3110	3150	9090
February	1950	1720	3975	1515	9160
March	700	300	3790	525	5315
Grand Total	**4340**	**3160**	**10875**	**5190**	**23565**

Filters

Sometimes you may want focus on just a certain section of your data. **Filters** can be used to **narrow down** the data in your PivotTable, allowing you to view only the information you need.

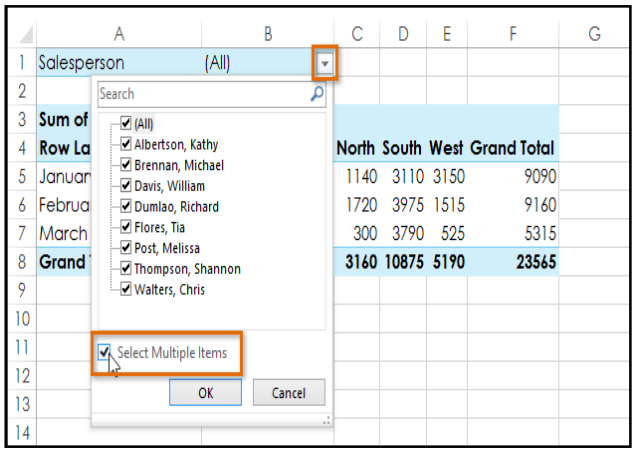


To add a filter:

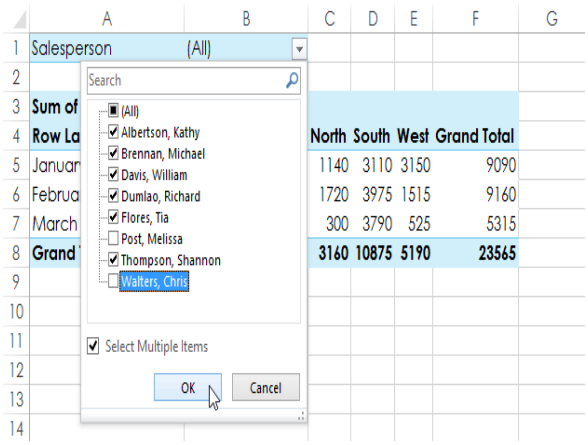
In our example, we'll filter out certain salespeople to determine how they affect the total sales.

1. Drag a field from the **Field List** to the **Filters** area. In this example, we'll use the **Salesperson** field.

2. The **filter** will appear above the PivotTable. Click the **drop-down arrow**, then check the box next to **Select Multiple Items**.



3. **Uncheck** the box for any items you don't want to include in the PivotTable. In our example, we'll uncheck the boxes for a few different salespeople, then click **OK**.



4. The PivotTable will adjust to reflect the changes.

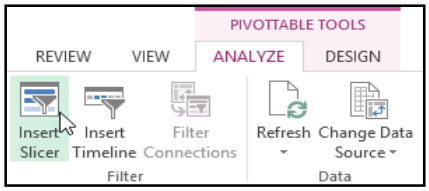
	A	B	C	D	E	F	G
1	Salesperson	(Multiple Items)					
2							
3	**Sum of Order Amount**	**Column Labels**					
4	**Row Labels**	**East**		**North**	**South**	**West**	**Grand Total**
5	January	925		1140	2755	3150	7970
6	February	1375		1720	1220	1515	5830
7	March	350		300	2525	525	3700
8	**Grand Total**	**2650**		**3160**	**6500**	**5190**	**17500**
9							
10							

Slicers

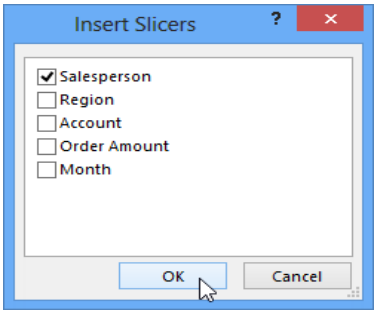
Slicers make filtering data in PivotTables even easier. Slicers are basically just **filters**, but they're easier and faster to use, allowing you to instantly pivot your data. If you frequently filter your PivotTables, you may want to consider using slicers instead of filters.

To add a slicer:

1. Select any cell in the PivotTable.
2. From the **Analyze** tab, click the **Insert Slicer** command.



3. A dialog box will appear. Select the desired **field**. In our example, we'll select **Salesperson**, then click **OK**.

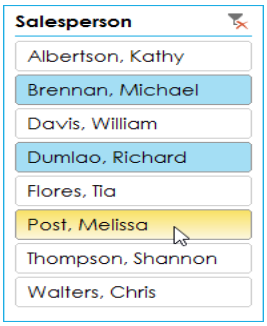


4. The slicer will appear next to the PivotTable. Each selected item will be highlighted in **blue**. In the example below, the slicer contains a list of all salespeople, and **six** of them are currently selected.

	A	B	C	D	E	F	G
1	Salesperson	(Multiple Items)					
2							
3	**Sum of Order Amount**	**Column Labels**					
4	**Row Labels**	**East**		**North**	**South**	**West**	**Grand Total**
5	January	925		1140	2755	3150	7970
6	February	1375		1720	1220	1515	5830
7	March	350		300	2525	525	3700
8	**Grand Total**	**2650**		**3160**	**6500**	**5190**	**17500**
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

Salesperson
- Albertson, Kathy
- Brennan, Michael
- Davis, William
- Dumlao, Richard
- Flores, Tia
- Post, Melissa
- Thompson, Shannon
- Walters, Chris

5. Just like **filters**, only **selected** items are used in the PivotTable. When you **select** or **deselect** items, the PivotTable will instantly reflect the changes. Try selecting different items to see how they affect the PivotTable. Press and hold the **Ctrl** key on your keyboard to select multiple items from a slicer.



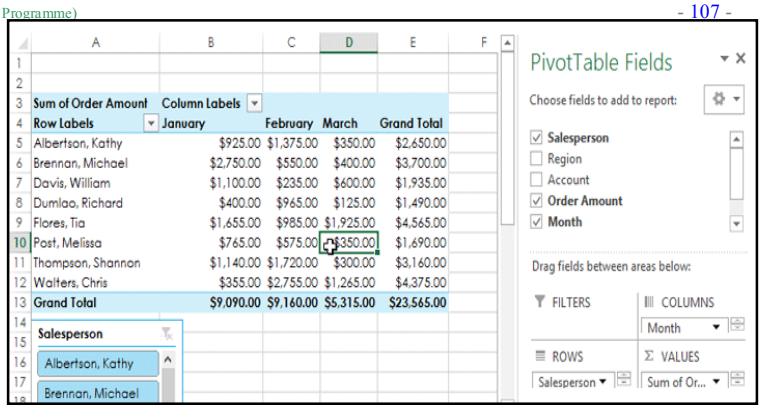
You can also click the **Filter icon** in the top-right corner to select all items from the slicer at once.

Pivot Charts

Pivot Charts are like regular charts, except they display data from a **PivotTable**. Just like regular charts, you'll be able to select a **chart type**, **layout**, and **style** that will best represent the data.

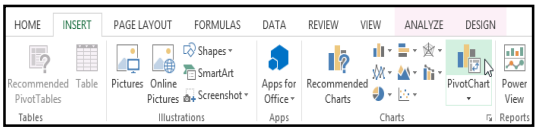
To create a PivotChart:

In this example, our PivotTable is showing each person's total sales per month. We'll use a PivotChart so we can see the information more clearly.



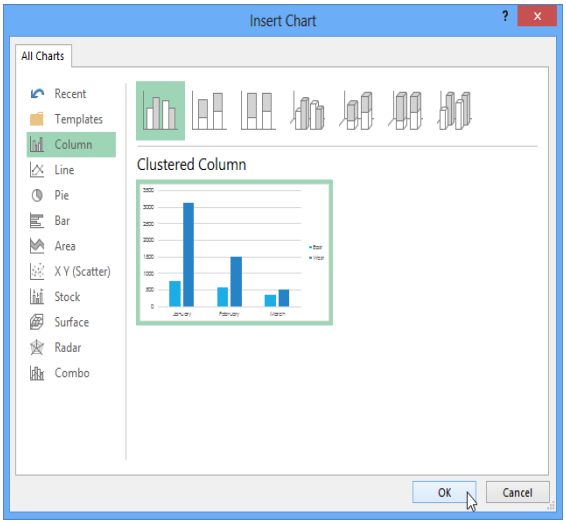
1. Select any cell in your PivotTable.

2. From the **Insert** tab, click the **PivotChart** command.

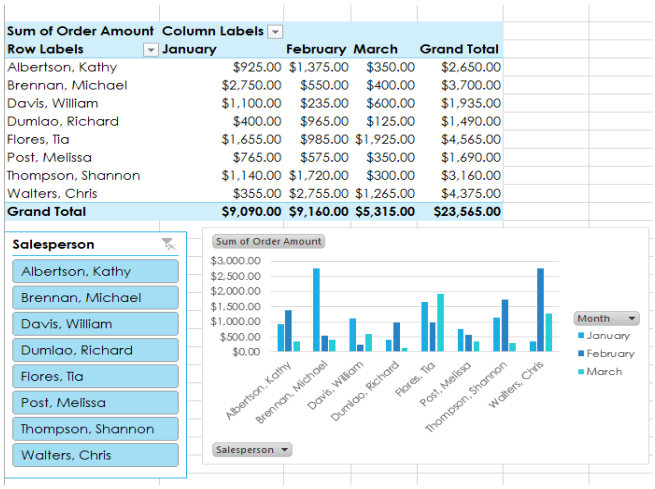


3. The **Insert Chart** dialog box will appear.

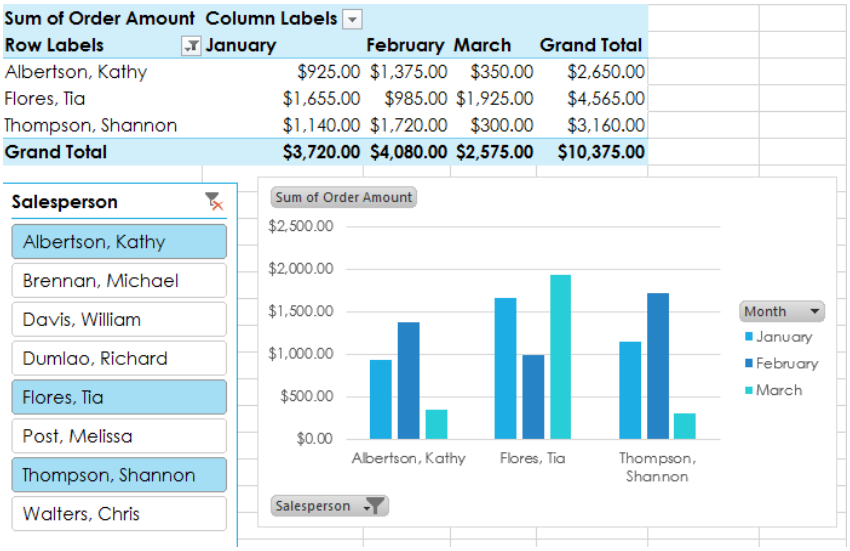
   Select the desired **chart type** and **layout**, then click **OK**.



4. The PivotChart will appear.



Try using **slicers** or **filters** to change the data that is displayed. The PivotChart will automatically adjust to show the new data.



Chapter-25 What-If Analysis

Introduction

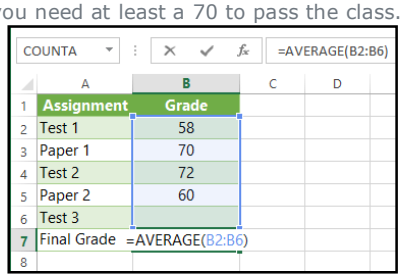
Excel includes many powerful tools to perform complex mathematical calculations, including **what-if analysis**. This feature can help you **experiment** and **answer questions** with your data, even when the data is incomplete. In this lesson, you will learn how to use a what-if analysis tool called **Goal Seek**.

Goal Seek

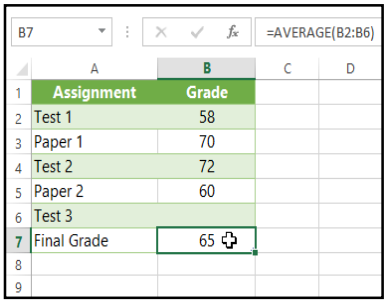
Whenever you create a formula or function in Excel, you put various parts together to calculate a **result**. **Goal Seek** works in the opposite way: It lets you start with the **desired result**, and it calculates the **input value** that will give you that result. We'll use a few examples to show how to use Goal Seek.

To use Goal Seek (example 1):

Let's say you're enrolled in a class. You currently have a grade of 65, and you need at least a 70 to pass the class. Luckily, you have one final assignment that might be able to raise your average. You can use Goal Seek to find out **what grade you need on the final assignment** to pass the class.

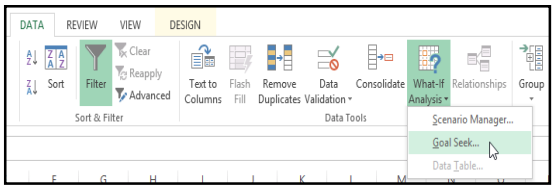


In the image below, you can see that the grades on the first four assignments are **58**, **70**, **72**, and **60**. Even though we don't know what the fifth grade will be, we can write a formula—or function—that calculates the final grade. In this case, each assignment is weighted equally, so all we have to do is average all five grades by typing **=AVERAGE(B2:B6)**. Once we use Goal Seek, cell **B6** will show us the minimum grade we'll need to make on that assignment.



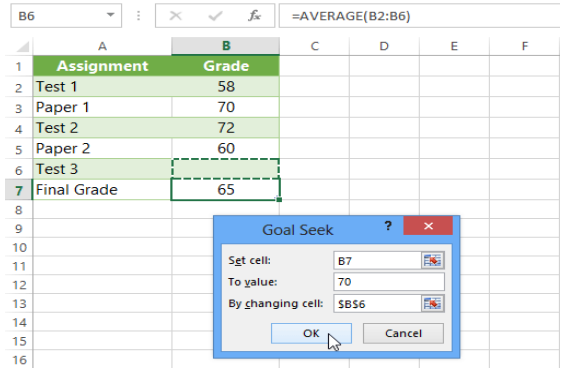
1. Select the cell whose value you want to change. Whenever you use Goal Seek, you'll need to select a cell that already contains a **formula** or **function**. In our example, we'll select cell **B7** because it contains the formula **=AVERAGE(B2:B6)**.

2. From the **Data** tab, click the **What-If Analysis** command, then select **Goal Seek** from the drop-down menu.

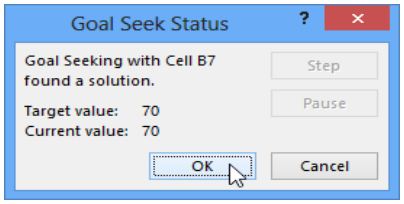


3. A dialog box will appear with three fields:
   - **Set cell:** This is the cell that will contain the desired result. In our example, cell **B7** is already selected.
   - **To value:** This is the desired result. In our example, we'll enter **70** because we need to earn at least that to pass the class.
   - **By changing cell:** This is the cell where Goal Seek will place its answer. In our example, we'll select cell **B6**because we want to determine the grade we need to earn on the final assignment.

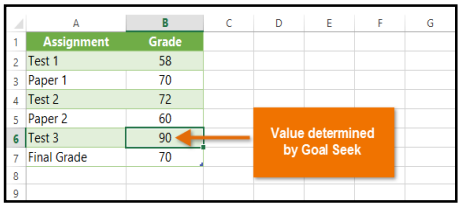
4. When you're done, click **OK**.



5. The dialog box will tell you if Goal Seek was able to find a solution. Click **OK**.

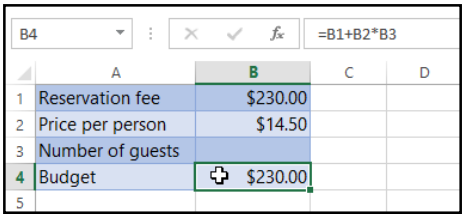


6. The result will appear in the specified cell. In our example, Goal Seek calculated that we will need to score at least a 90 on the final assignment to earn a passing grade.



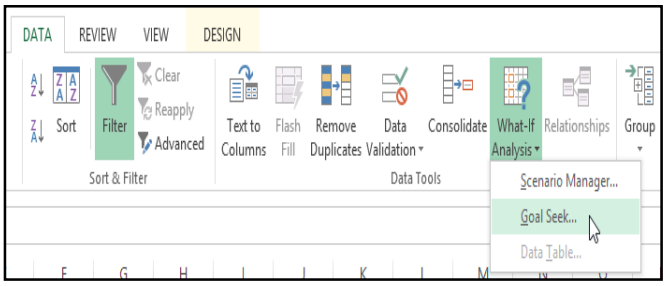
To use Goal Seek (example 2):

Let's say you're planning an event and want to invite as many people as you can without exceeding a budget of $500. We can use Goal Seek to figure out how many people to invite. In our example below, cell **B4** contains the formula **=B1+B2*B3** to calculate the total cost of a room reservation, plus the cost per person.



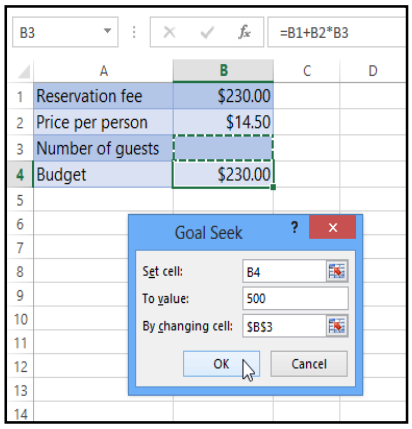
1. Select the cell whose value you want to change. In our example, we'll select cell **B4**.

2. From the **Data** tab, click the **What-If Analysis** command, then select **Goal Seek** from the drop-down menu.

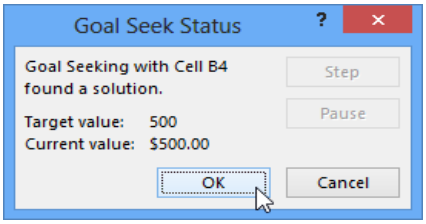


3. A dialog box will appear with three fields:
   - **Set cell:** This is the cell that will contain the desired result. In our example, cell **B4** is already selected.
   - **To value:** This is the desired result. In our example, we'll enter **500** because we only want to spend $500.
   - **By changing cell:** This is the cell where Goal Seek will place its answer. In our example, we'll select cell **B3**because we want to know how many guests we can invite without spending more than $500.

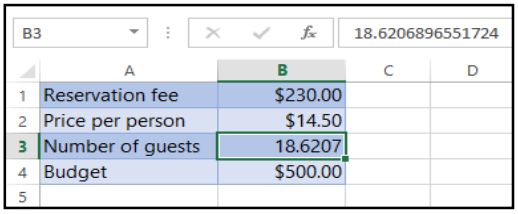
4. When you're done, click **OK**.



5. The dialog box will tell you if Goal Seek was able to find a solution. Click **OK**.



6. The result will appear in the specified cell. In our example, Goal Seek calculated the answer to be approximately 18.62. In this case, our final answer needs to be a whole number, so we'll need to round the answer up or down. Because rounding up would cause us to exceed our budget, we'll **round down** to 18 guests.

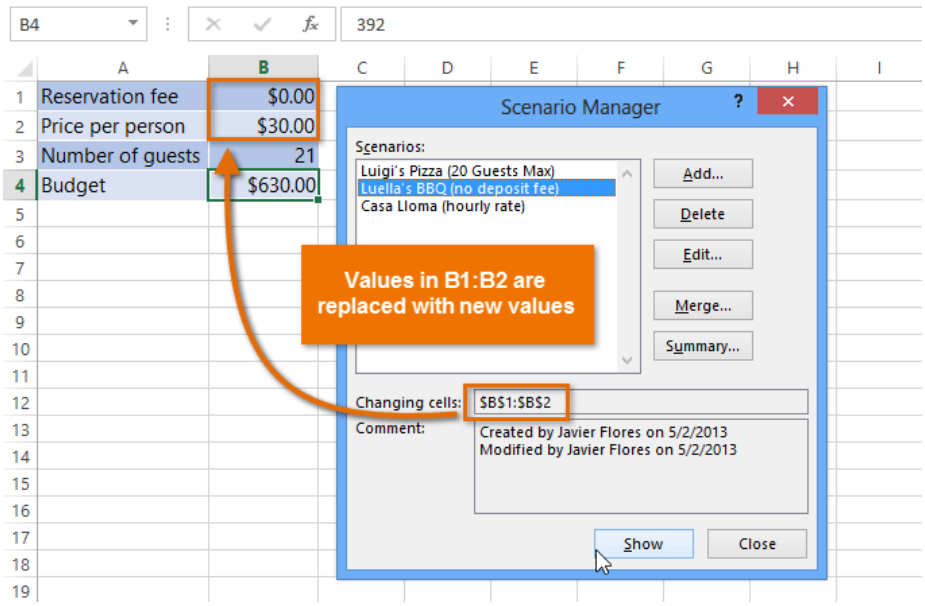


As you can see in the example above, some situations will require the answer to be a whole number. If Goal Seek gives you a decimal, you'll need to **round up or down**, depending on the situation.

Other types of what-if analysis

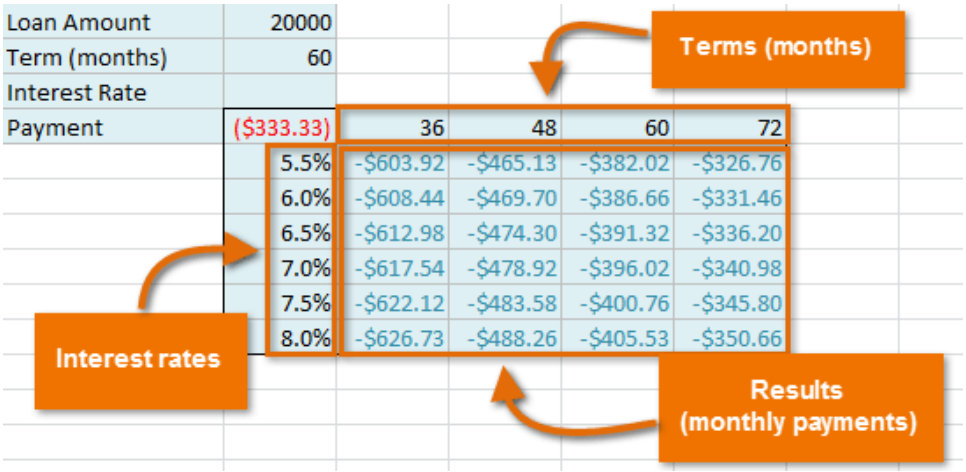
For more advanced projects, you may want to consider the other types of what-if analysis: **scenarios** and **data tables**. Instead of starting from the desired result and working backward, like Goal Seek, these options allow you to test multiple values and see how the results change.

- **Scenarios** let you substitute values for **multiple cells** (up to 32) at the same time. You can create as many scenarios as you want and then compare them without changing the values manually. In the example below, we're using scenarios to compare different venues for an upcoming event.



For more information on scenarios, check out **this article** from Microsoft.

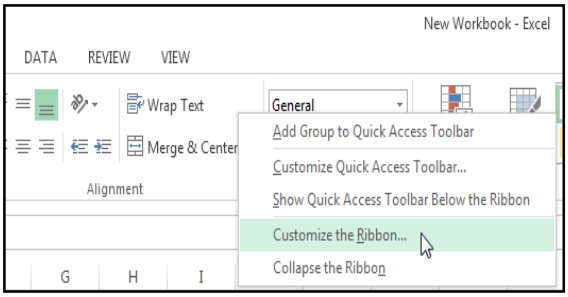
- **Data tables** allow you to take one or two variables in a formula and replace them with **as many different values as you want**, then view the results in a table. This option is especially powerful because it shows **multiple results** at the same time, unlike scenarios or Goal Seek. In the example below, we can view 24 possible results for a car loan.



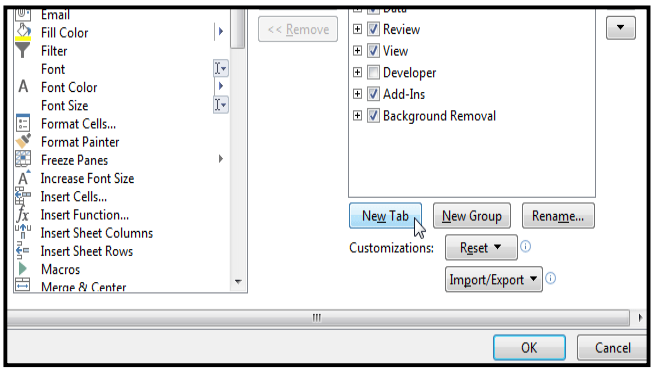
Chapter-26 Excel 2013: Customizing the Ribbon

To customize the Ribbon in Excel 2013:

You can customize the Ribbon by creating your own **tabs** with whichever commands you want. Commands are always housed within a **group**, and you can create as many groups as you want in order to keep your tab organized. If you want, you can even add commands to any of the default tabs, as long as you create a custom group in the tab.



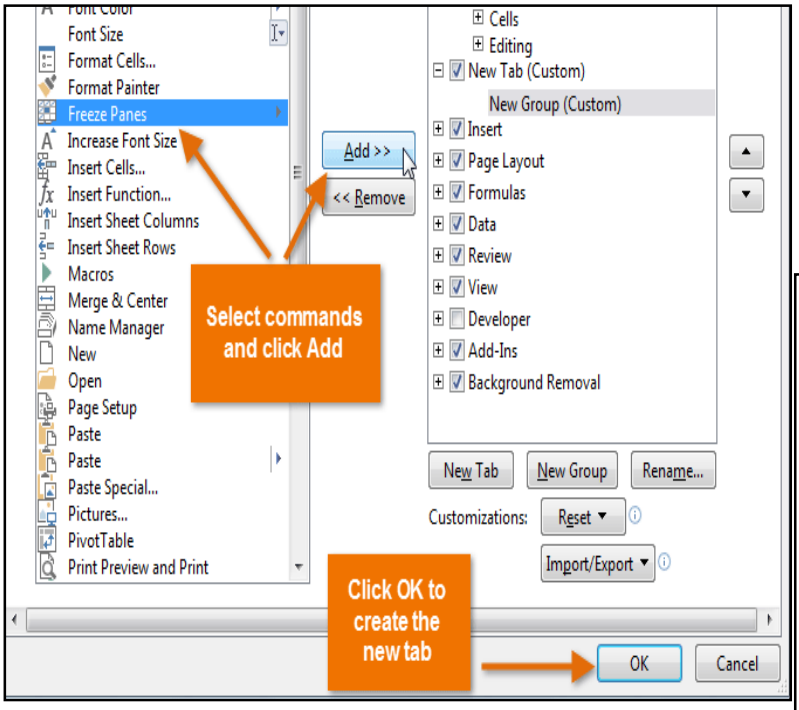
1. Right-click the **Ribbon** and select **Customize the Ribbon...** from the drop-down menu.



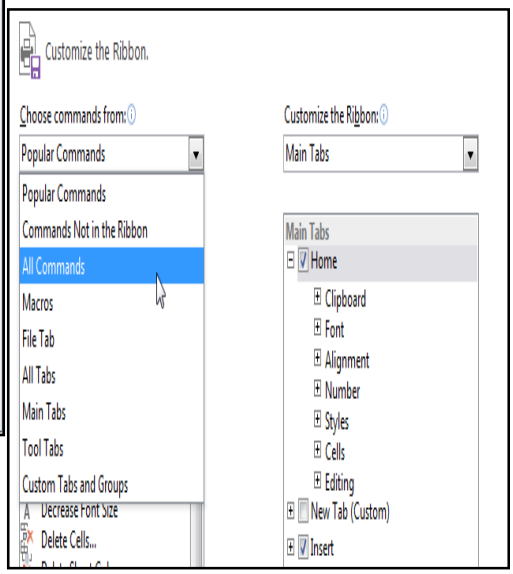
2. The **Excel Options** dialog box will appear. Locate and select **New Tab**.

3. Make sure the **New Group** is selected, select a **command**, then click **Add**. You can also drag commands directly into a group.

4. When you are done adding commands, click **OK**. The commands will be added to the Ribbon.



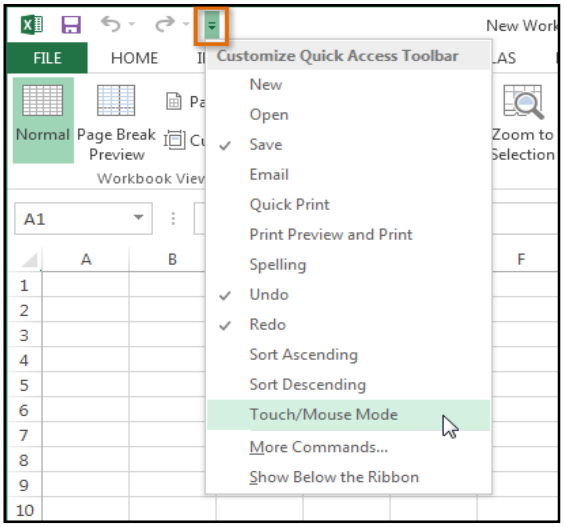
If you don't see the command you want, click the **Choose commands from:** drop-down box and select **All Commands**.



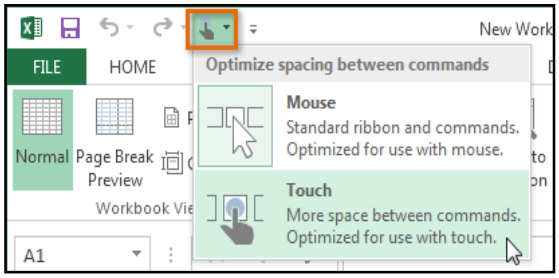
To view the Ribbon in Touch Mode in Excel 2013:

If you're working on a touch-screen device, you can enable **Touch Mode** to create more open space on the Ribbon, making commands easier to tap with your fingers.

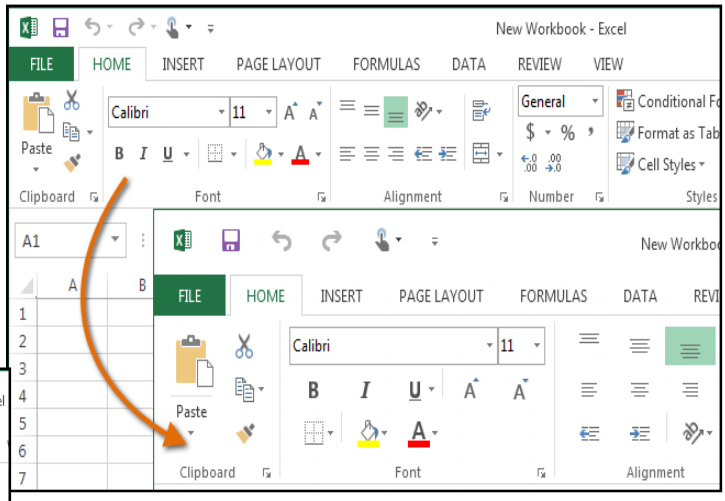
1. Click the **drop-down arrow** to the right of the **Quick Access toolbar**, then select **Touch/Mouse Mode** from the drop-down menu.



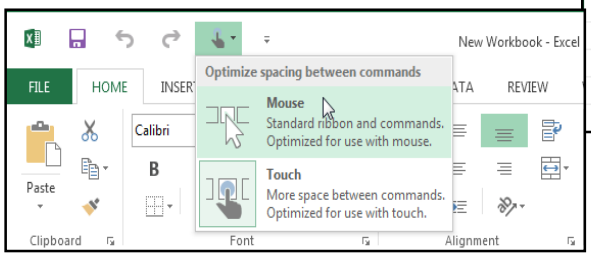
2. The **Touch/Mouse Mode** command will appear on the Quick Access toolbar.
3. Click the **Touch/Mouse Mode** command, then select **Touch** from the drop-down menu.



4. The Ribbon will switch to **Touch Mode**.

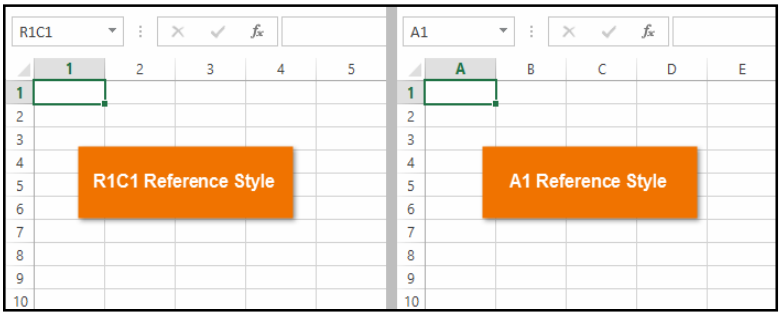


To **turn off Touch Mode**, click the **Touch/Mouse Mode** command, then select **Mouse** from the drop-down menu.

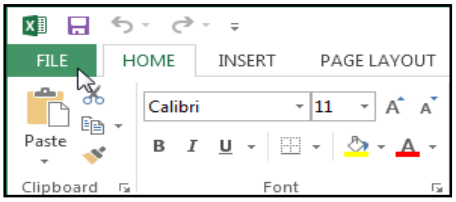


What are reference styles?

Every Excel spreadsheet contains **rows** and **columns**. Most of the time, columns are identified by **letters (A, B, C)**, and rows are identified by **numbers (1, 2, 3)**. In Excel, this is known as the **A1 reference style**. However, some prefer to use a different method where columns are also identified by numbers. This is known as the **R1C1 reference style**.

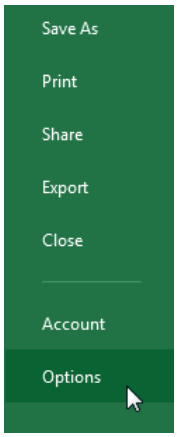


While the R1C1 reference style is helpful for certain situations, you'll probably want to use the A1 reference style most of the time. This tutorial will use the A1 reference style. If you're currently using the R1C1 reference style, you'll need to **turn it off**.

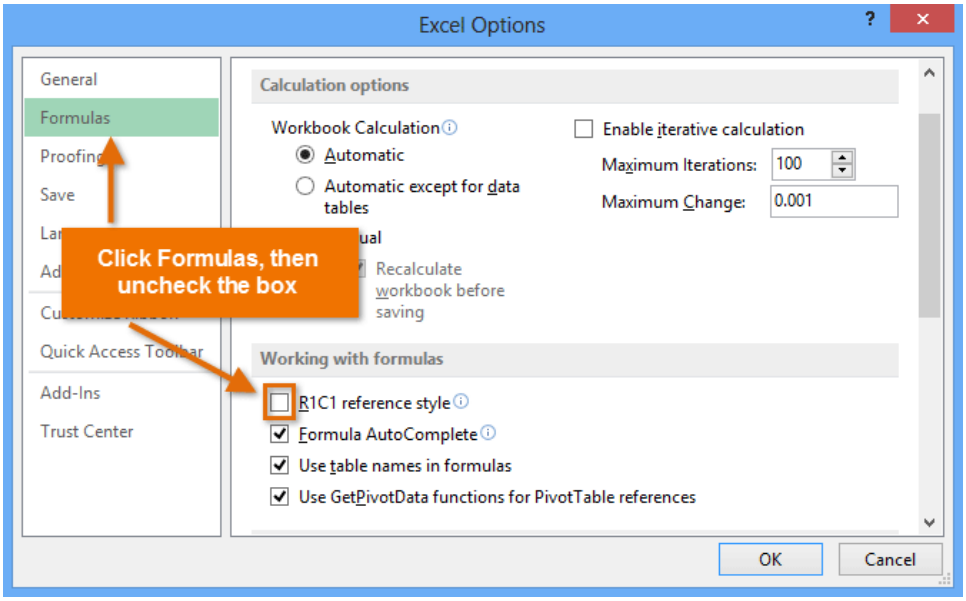


To turn off the R1C1 reference style:

1. Click the **File** tab to access **backstage view**.
2. Click **Options**.



3. The **Excel Options** dialog box will appear. Click **Formulas**, uncheck the box next to **R1C1 reference style**, then click **OK**. Excel will now use the A1 reference style.



4 free alternatives to

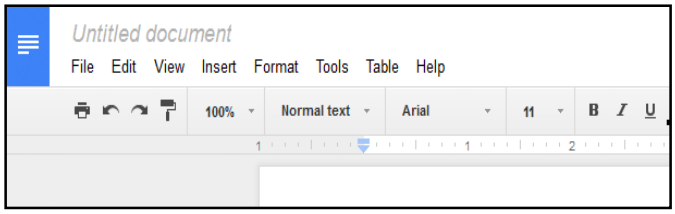
Microsoft Office

Microsoft Office is one of the most popular programs on the market, with more than **1 billion users** worldwide. But at $139.99 for just the basic package (Word, Excel, PowerPoint, and OneNote only), it's also a little expensive. What if you can't afford it?

Thankfully, there are programs like **Google Docs**, **Office Online**, **Open Office**, and **LibreOffice**. They don't have as many features as Microsoft Office (think of them as **Office lite**), but they're free, easy to use, and readily available online. They're a great alternative if you're looking for something simple or if you can't stomach the price of Microsoft Office.

We wanted to share these programs with you just in case you hadn't heard of them before. We hope you find them useful at home, at work, or at school.

Google Docs



Google Docs is a web-based program you can access directly from your browser. This means there's nothing to download or install—all you have to do is sign in to your **Google account** and navigate to **Google Drive** (where Google Docs is housed), and you can create and store files online.

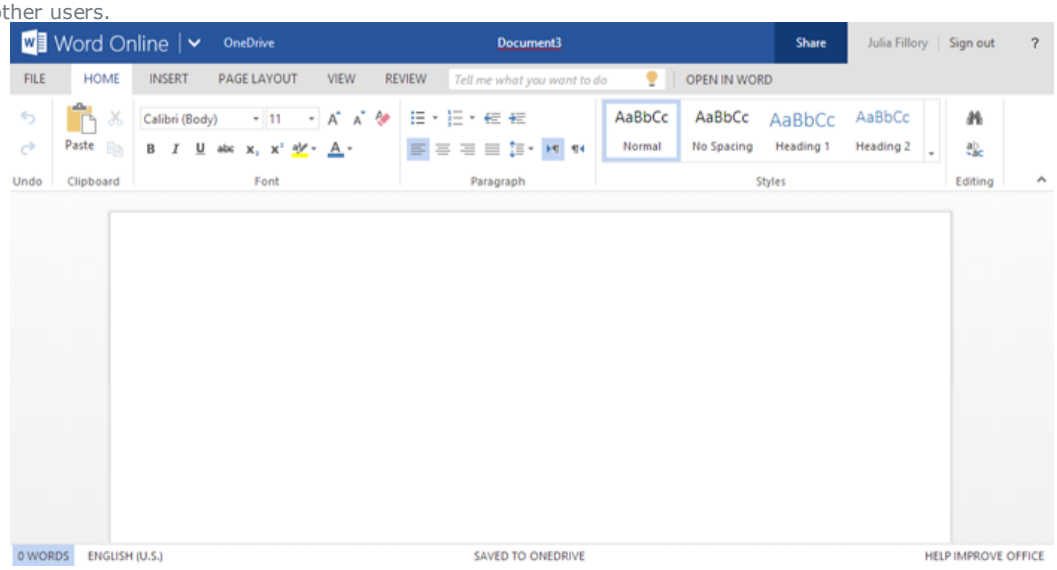
Google Docs comes with all types of useful features, like the ability to **share your files** with other people so you can work on them at the same time. You can also access your files on **any device**, including your phone, tablet, or a different computer.

To learn more, visit our Google Drive and Docs tutorials:

- **Google Drive**
- **Google Documents**
- **Google Sheets**

Office Online

Microsoft's **Office Online** is also a web-based program. All you need is a free account—this time, a **Microsoft account**—and you can access your files almost anywhere. You can also **share your files** online and collaborate with other users.



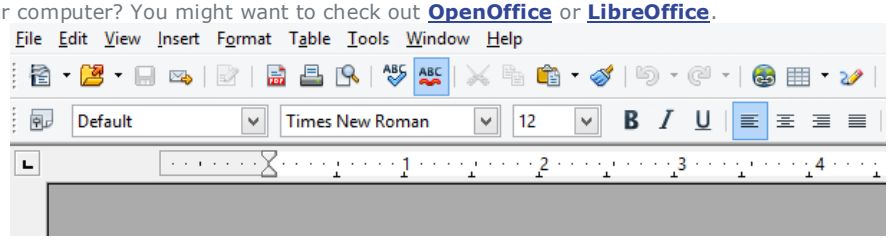
The coolest thing about Office Online is how similar it is to **Microsoft Office** (after all, both products are made by Microsoft). It offers many of the **same tools and features**, just in a simpler, more web-friendly package. The interface should be a breeze if you have any experience with the desktop version of Office.

Learn more about it with our tutorial:

- **OneDrive and Office Online**

OpenOffice and LibreOffice

Looking for a more traditional alternative to Microsoft Office? Something that you can actually **download and install** on your computer? You might want to check out **OpenOffice** or **LibreOffice**.



These programs may not be as slick as Google Docs or Office Online, but they come with a few extra features, including a tool for **creating and managing databases**. You can use them for almost all of your home and office needs, and the environment is remarkably similar to older versions of Microsoft Office.

Simplified

E- BOOK

MS Excel 2013

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Chapter At A Glance